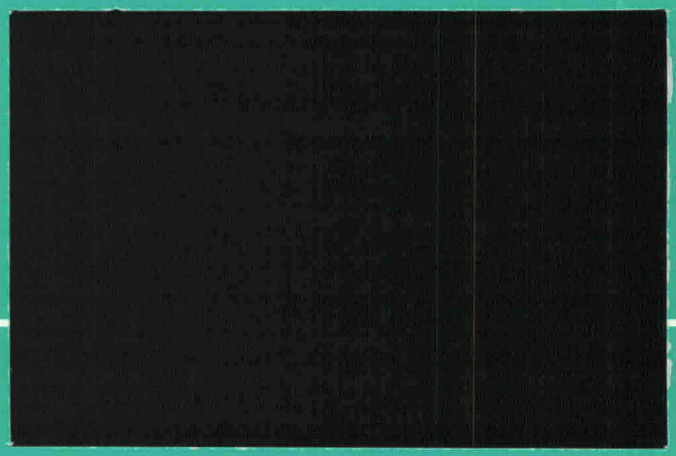
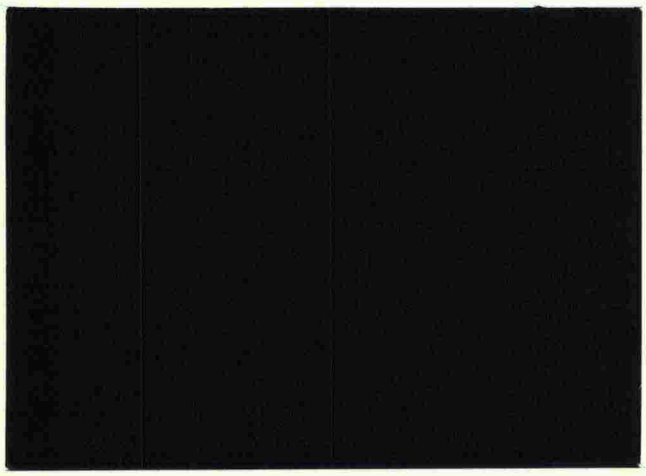
TVH

Talousosasto

Tutkimustoimisto





SUMMARIES OF THE PERSON TRAFFIC STUDY REPORTS

HELSINKI 1978

THE NATIONAL BOARD OF PUBLIC ROADS AND WATERWAYS

RESEARCH OFFICE OF ECONOMIC DIVISION

SARJA B: 3/1978

FOREWORD

In 1974 the National Board of Public Roads and Waterways carried out a nationwide study of the traffic behaviour of the Finns. The Research Office of the Economic Division was in charge of planning and leading the study. But due to its large scale, and partly also due to its scope extending beyond the Board itself, a supervisory working group was set up, with representatives from the Ministry of Transport, the Ministry of the Interior, the Parliamentary Transport Committee, the Union of Finnish Regional Planning Associations, the Central Statistical Office of Finland, the Board of Administration of the Finnish State Railways and the National Board of Public Roads and Waterways.

The project group included 2-4 members from the Research Office. Due to the limited resources, engineering and consulting firms were turned to for the planning, implementation and reporting of the study. A list of the participating persons and enterprises is given in an appendix.

This report contains English summaries of the reports of the Person Traffic Study. They have thus been written by several people. We therefore ask the reader to take an understanding attitude to the stylistic variations in different parts of the study.

Head of Office Jorma Kosunen

CONTENTS

1. INTRODUCTION OF THE PERSON TRAFFIC STUDY

By means of the Person Traffic Study, a country-wide investigation is to be performed concerning the general features of the trips in passenger traffic as well as concerning their variations between different population groups, regions and times. Thus, the objective is to create a general picture of how the Finns move, i.e. to obtain information, for example, on average trip numbers and mileages per person, on mode of transport used, on the purpose, length and duration of the trips. For the purpose of more detailed analyses and different models, this information is combined with information illustrating a person and the properties of his environment.

The planning of the study was started in 1971, and a preliminary study, which served for the planning of the study proper, was performed in 1972. During 1974 the interview part of the study was accomplished, whereby information was obtained on all the trips performed by about 12 000 Finns during one day as well as on the long trips, more than 30 km of length, performed by about 10 000 Finns during two weeks. The interviewing was performed as a mail interviewing scattered around the entire year, with each replying person participating in the study only once. The replying persons were 13 to 64 years of age. Travelling by people younger and older than this as well as the quality and representativeness of the replies to the mail questionnaire were additionally examined by means of home interviews.

The study material was stored on a computer, and its processing has been performed mainly by means of statistical-mathematical HYLPS-programs. The output production and reporting of the study can be divided roughly into three parts:

- inventorying and describing the present situation
- analysing the results
- specific investigations.

The attached figure shows the subject matters of partial studies as well as the numbers of completed reports.

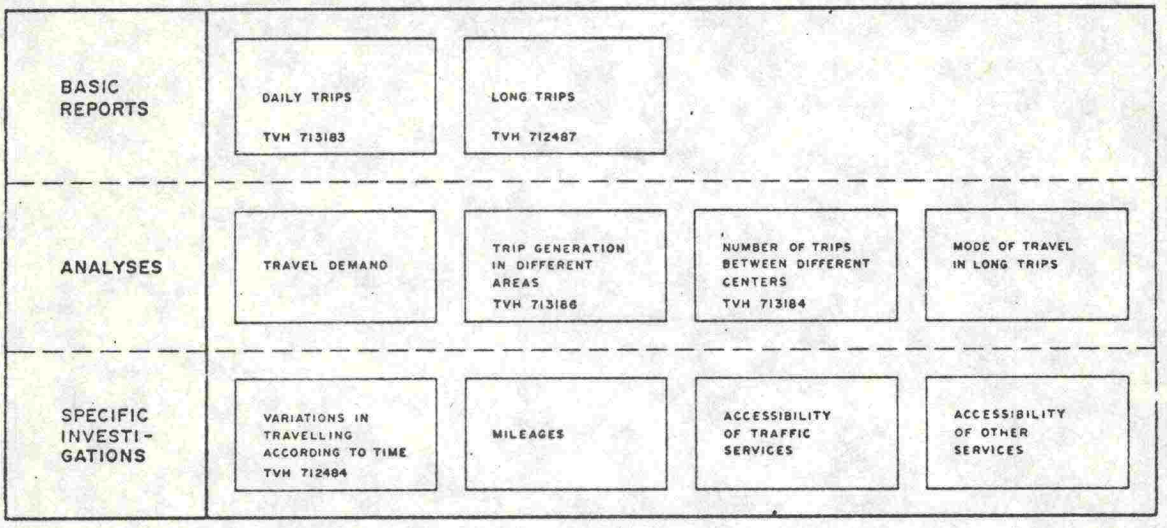


Figure: The subject matters of partial studies

2. BASIC KNOWLEDGE OF FINNISH PERSON TRAFFIC

2.1 Daily trips

Report: "Henkilöliikennetutkimus: Näin me liikuimme 1974"
(The Person Traffic Study: This is how we moved in 1974)
TVH 713 183

SUMMARY

General

The report deals with the daily numbers of trips of people at ages of 13 to 64 years, with the travelling mileages,

and with the time used for the trips, both in general and in relation to the personal properties and the location of dwelling. Moreover, the purposes of the trips and the modal split are discussed. The report deals with the characteristic figures illustrating the average travelling during the whole year and largely also in the whole country, which involves limitations in respect of the usability of the results for local and seasonal detail-planning.

Numbers of trips, mileages and time consumption

As calculated per person, the quantities illustrating the extent of daily travelling were on the average as follows:

daily number of trips	2.8 trips per day
daily mileage	36 kms per day, and
time consumed daily for trips	1 hour 15 min. per day

Differences in travelling of individual people were large, and so one quarter of Finns at 13 to 64 years of age performed less than 0.55 trips per day, one half performed less than 1.8 trips per day, and three quarters performed less than 3.8 trips per day. One quarter of Finns had a daily mileage lower than 1.2 kms, one half lower than 12 kms, and only one quarter had a mileage higher than 41 kms. The time consumed for daily travelling was in the case of one quarter of Finns less than 6 minutes, of one half less than 48 minutes, and of three quarters less than 98 minutes.

Comparison of these quarter values with the means (2.8 trips per day, 36 kms per day, and 75 minutes per day) proves that the travelling of few persons performing ever so much more frequent trips of higher length of duration increases the means high above median values (one half less than).

Purpose of trips and used modes

Journeys were performed to different types of places as follows:

number of trips to working site	0.45 trips/day
number of trips to place of visit	0.24 trips/day
number of trips to general store or grocery store	0.22 trips/day
number of trips to place of entertainment, hobby, or recreation	0.20 trips/day

The number of return trips back home was 1.13 trips per day, and the number of trips performed to other destinations was on the average less than 0.2 trips per day per Finn.

The modal split is decisively dependent on the basis of its calculation. The differences counted in the proportions of numbers of trips, mileages or durations are considerable. The share of light traffic in the number of trips was 36 %, in the mileage 5 %, and in the travelling duration 26 %. The shares of individual motor vehicle traffic were correspondingly 44 %, 65 %, and 47 %. The share of public transportation was 15 % of the number of trips, 24 % of mileage, and 23 % of the travelling time.

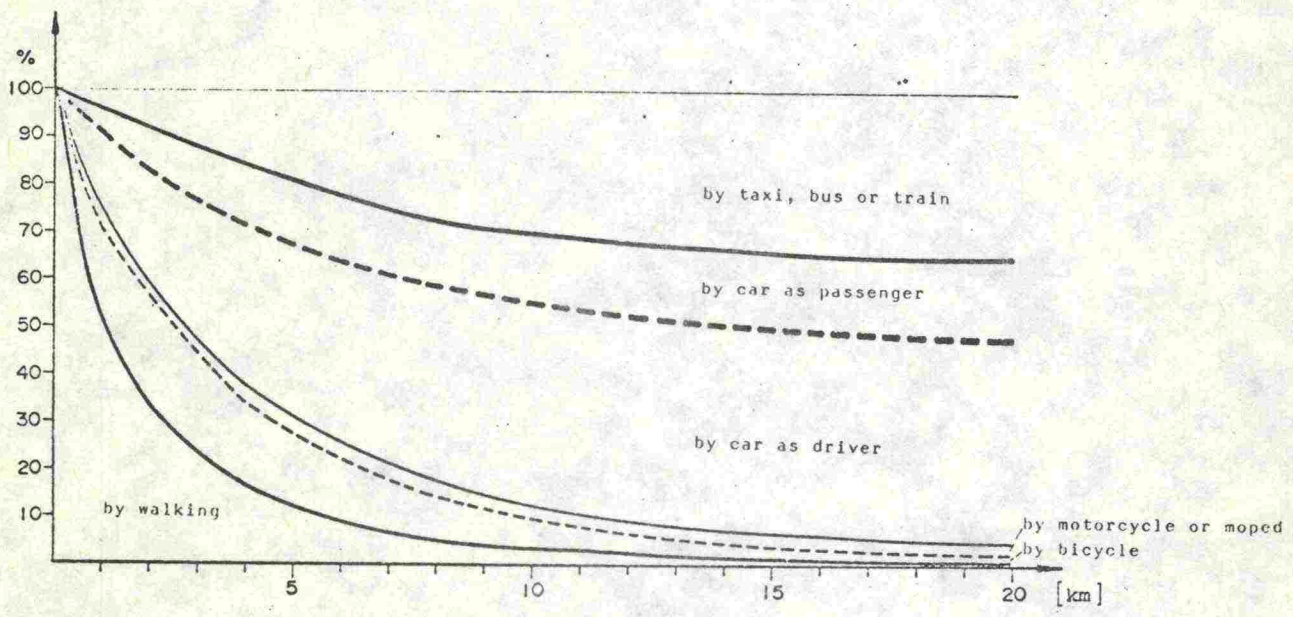


Figure: Modal split in accordance with length of journey.

A person's socio-economic background and daily travelling

According to the results, a person's age has a great effect on the daily travelling. Those at ages of 25 to 29 years were the most mobile age category. Their average number of journeys was 3.7 trips per day and mileage 48 kms per day. With people younger and older than said age, the travelling decreased uniformly with decrease and increase in age. People of 50 to 64 years of age traveled only an average of 1.9 trips and 25 kms per day. In each age category men travelled more than the women of their age. This difference in mobility between sexes increased strongly with age. The differences in the daily mobility of women and men do, however, not only result from the sex, but from the difference in the daily duties and functions.

Going to work is one of the most important factors affecting the number and nature of trips. Those who worked outside home were the most frequent travellers and performed almost 3 times as many trips and 2.5 times the distance per day as compared with the least mobile group, those retired. The level of education also seems to have a clear effect on the extent of daily travelling. The higher level of education a person had obtained, the more did he also travel.

The gross income of the family had a significant effect on the value of the number of travels. The members of families with the lowest income levels, less than 1,000 Fmks per month, performed only an average of 1.9 trips per day. When the income of the family was 1,500 to 2,000 Fmks per month, the number of trips was already almost 3.2 trips per day, and at more than 4,000 Fmks of income per month the number was already more than 4.2 trips per day and per person. The daily performance per person increased with an increase in the income of the family almost proportionally to the increase in the numbers of trips. The performance was 26 kms per day at less than 1,000 Fmks per month, 37 kms per day at 1,500 to 2,000 Fmks per month, and 51 kms per day at more than

4,000 Fmks per month, per member of family, said income levels meaning incomes of the families in 1974.

The daily travelling by people who had no driver's licence was inferior to that by holders of driver's licence, irrespective of the number of cars available to the family. With an increase in the number of cars at disposal of the family, the travelling increased both in the case of holders of driver's licence and in the case of those who did not have a driver's licence.

Place of dwelling and daily travelling

The daily travelling has been examined as per the place of dwelling of the person. The following groups of municipalities were used as the regional distribution:

1. Helsinki with its surroundings
2. Turku, Tampere and Lahti with surroundings
3. Other cities and market towns in southern Finland
4. Rural municipalities in southern Finland
5. Cities and market towns in central Finland
6. Rural municipalities in central Finland
7. Cities and market towns in northern Finland
8. Rural municipalities in northern Finland

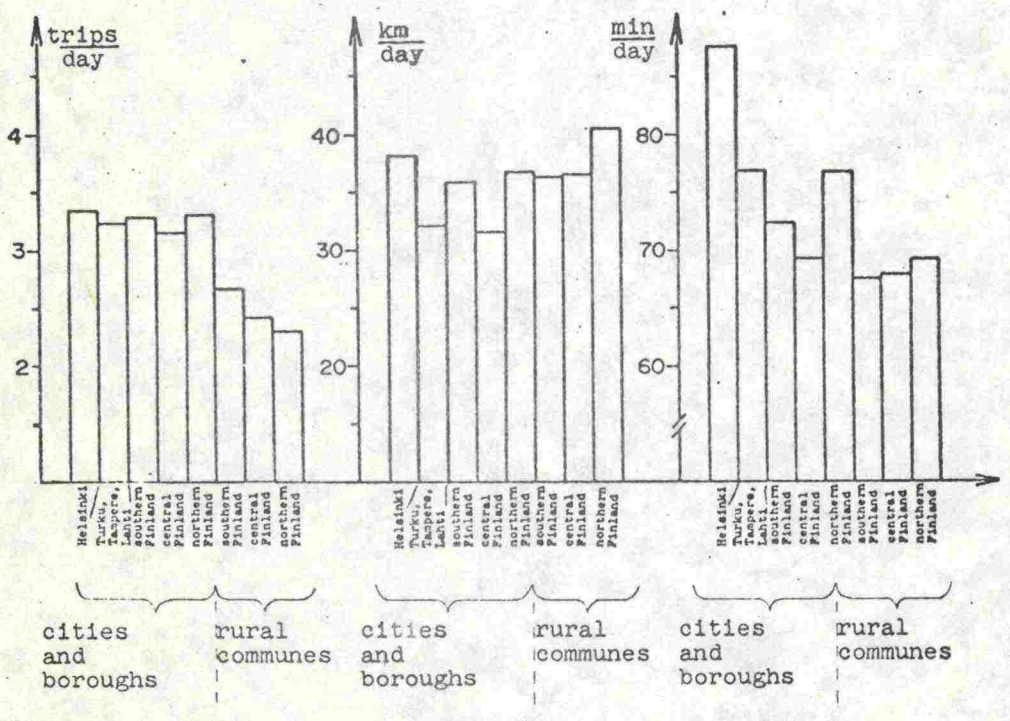


Figure: Daily numbers of trips, travel performances, and time used for journeys as per group of municipality.

The number of daily journeys was almost the same in all the cities and market towns in our country, i.e. within the range of 3.15 to 3.35 journeys per day. The number of journeys in rural municipalities decreased when moving from the south towards the north. The variation in the performance as per group of municipality was not equally clearly featured as that in the number of journeys. On the average, the performance was in rural municipalities higher than in the cities and market towns with its surroundings. The daily consumption of time for journeys was highest in Helsinki and in its surroundings, on the average slightly less than 1.5 hours per day. The consumption of time for travelling was least in rural municipalities and in the cities and market towns in central Finland, about 20 minutes less than in the region of Helsinki.

In the following there are some more figures illustrating the results of the daily trip study.

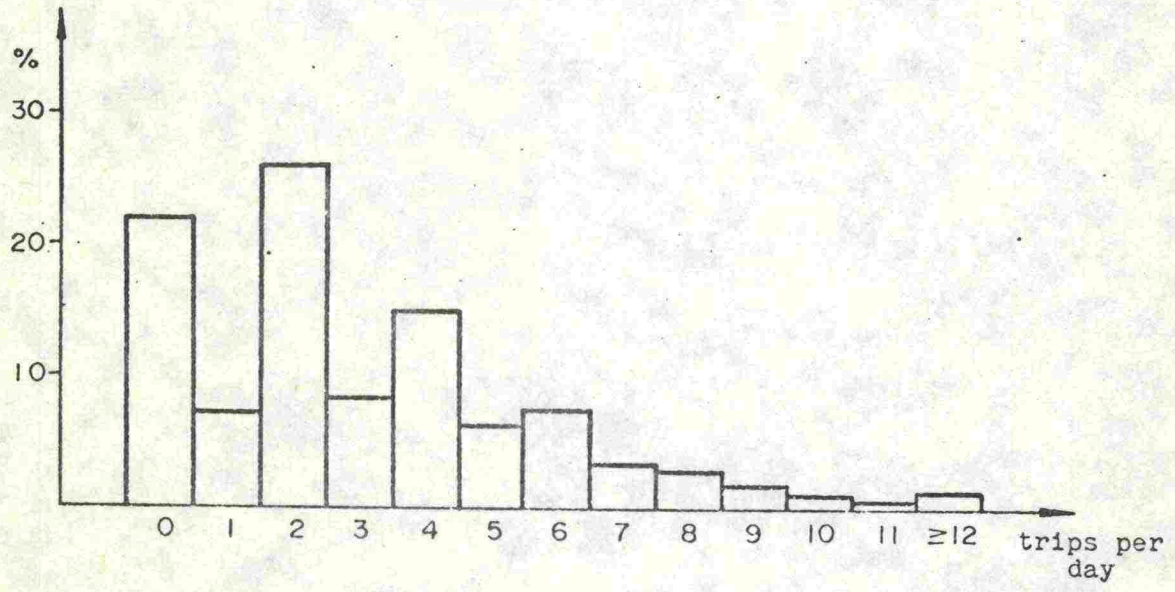


Figure: Percentage distribution of daily trips

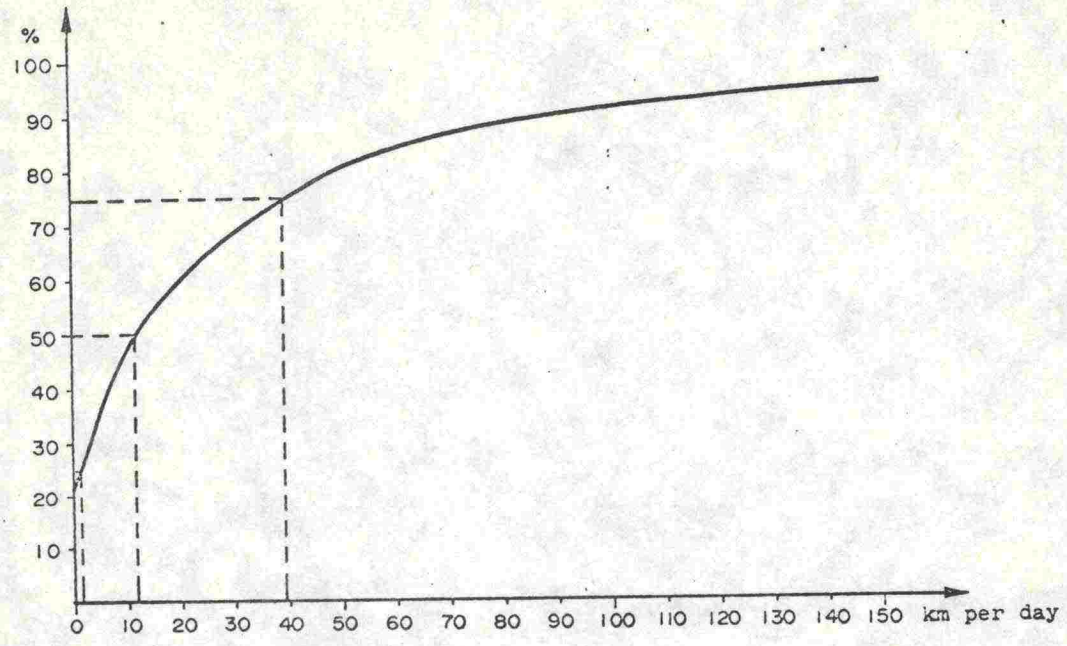


Figure: The cumulative frequency distribution of daily mileage

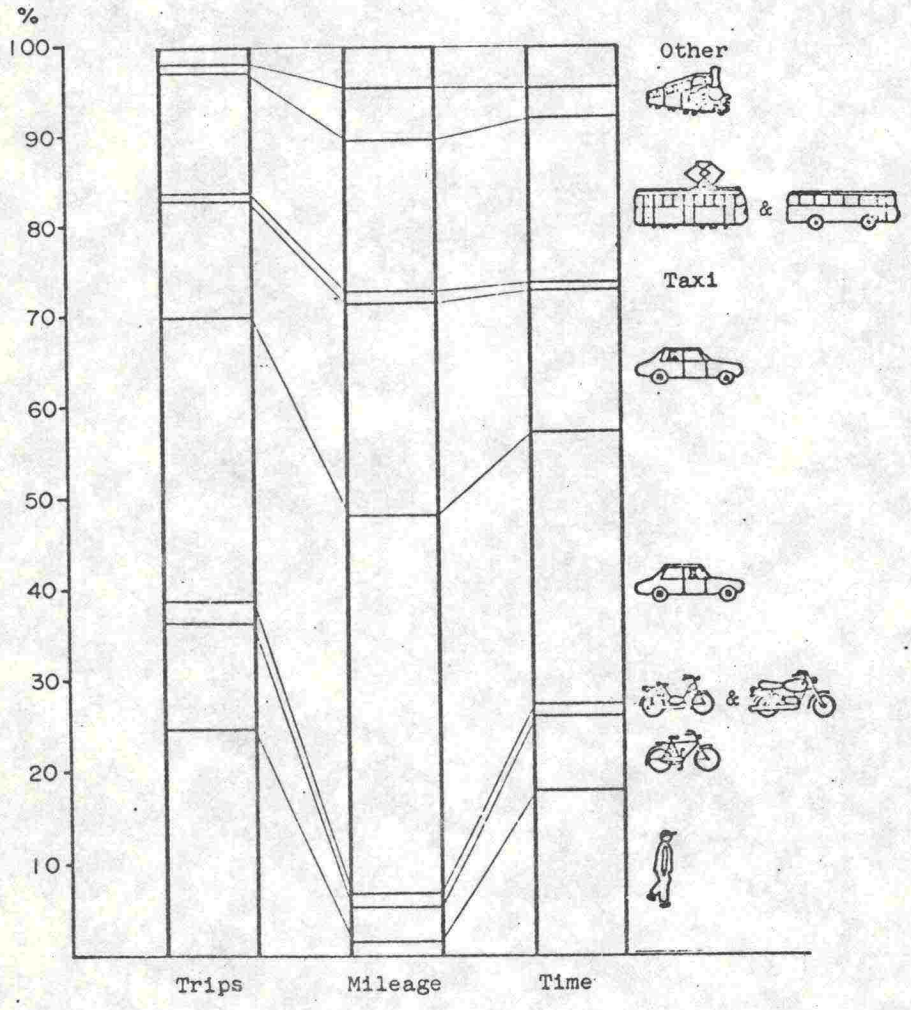


Figure: The modal split of the number of trips, mileage and travel time

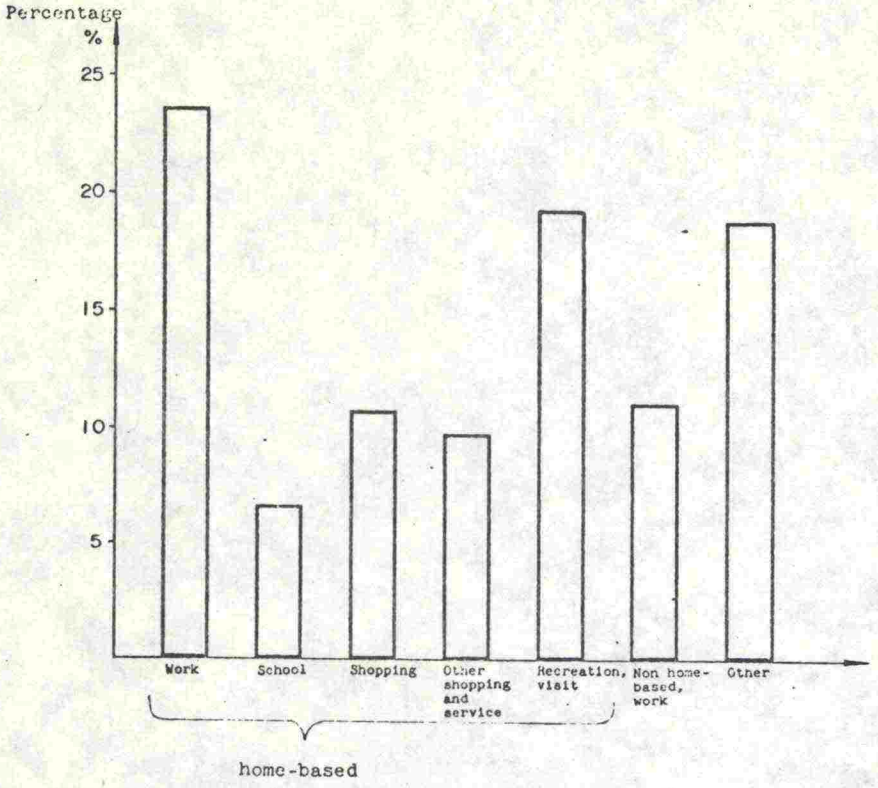


Figure: Trip purpose distribution

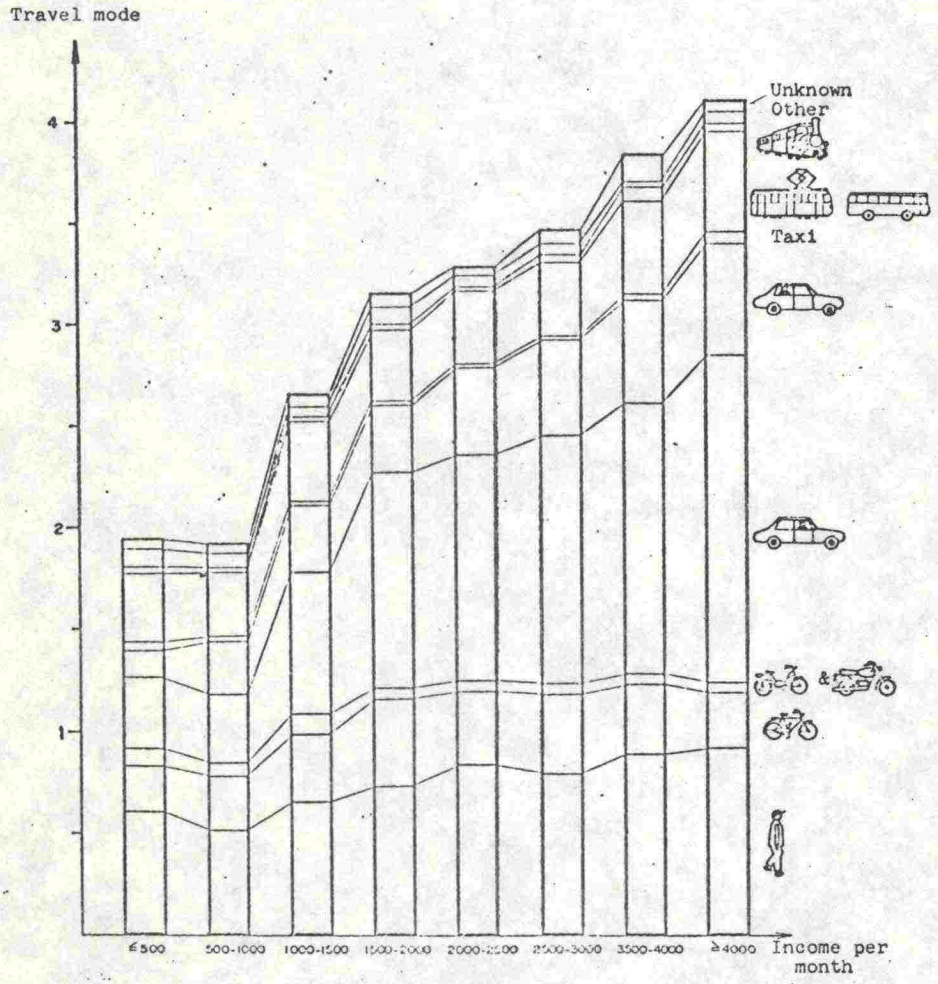


Figure: The number of daily trips per travel mode according to family's income

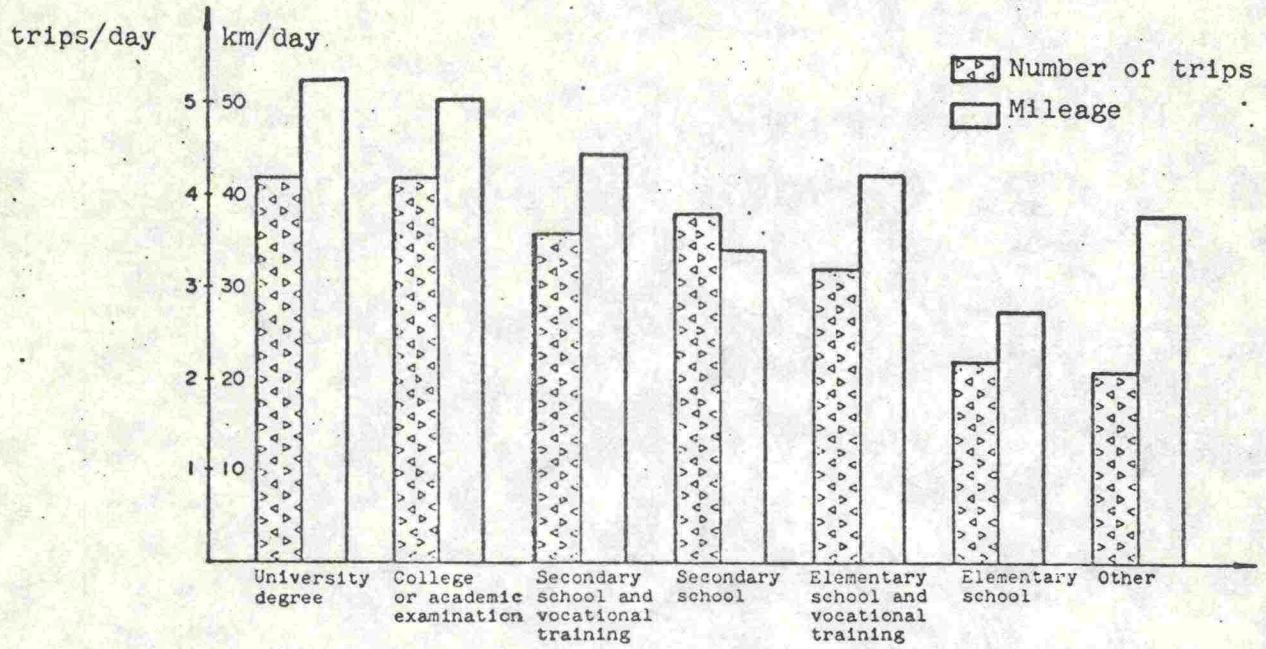


Figure: The number of daily trips and mileage according to person's education

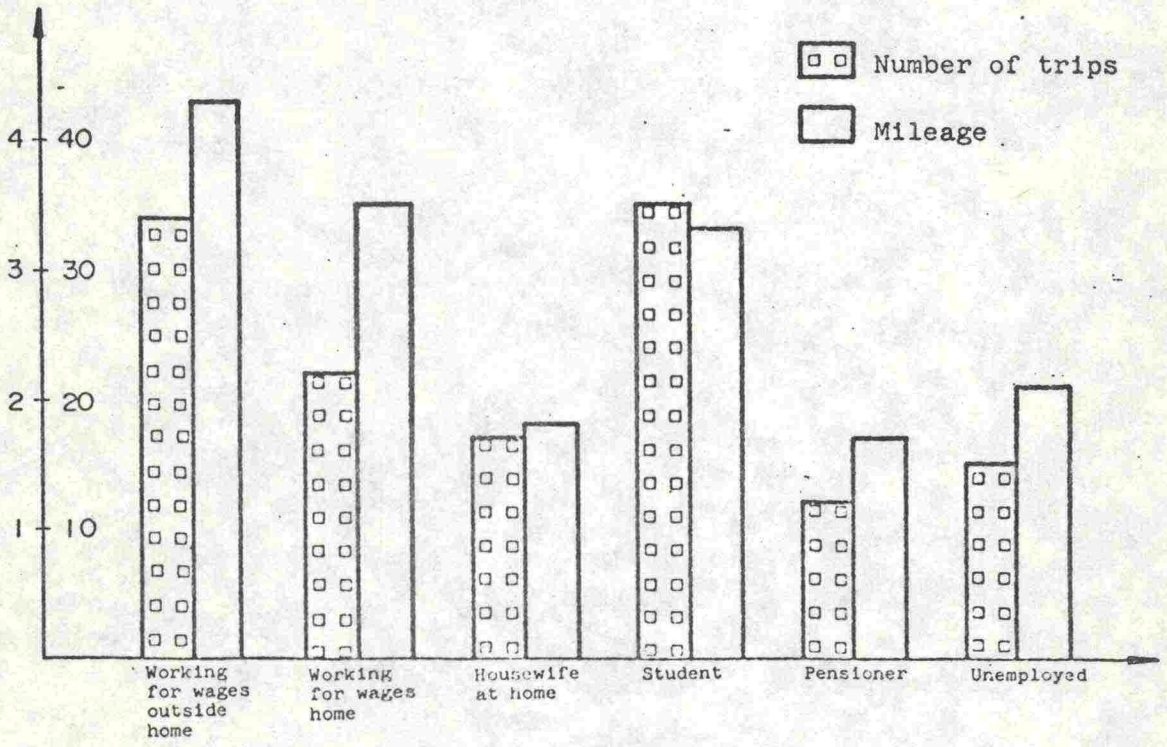


Figure: The number of daily trips and mileage according to person's daily job

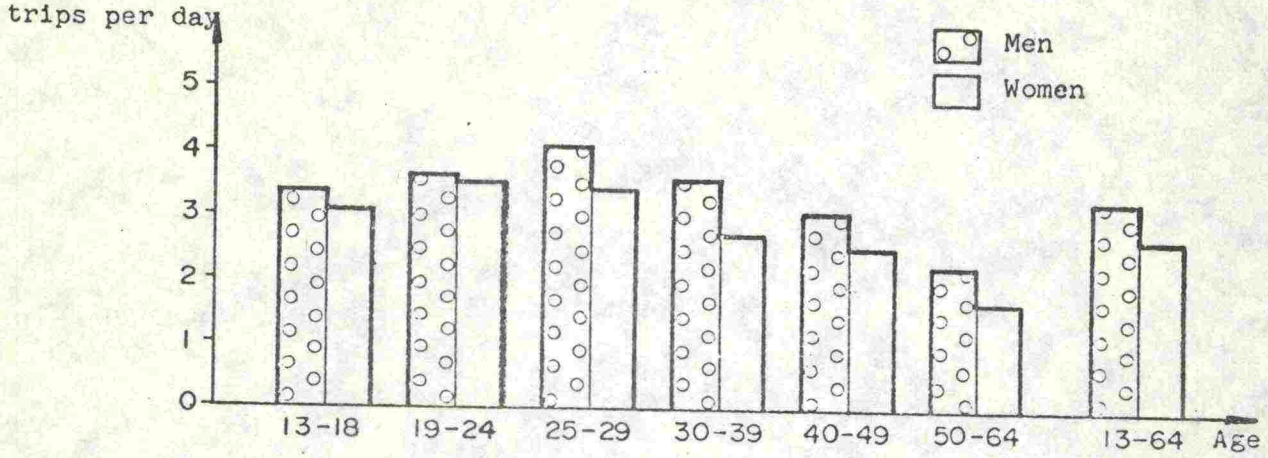


Figure: The number of daily trips according to age and sex

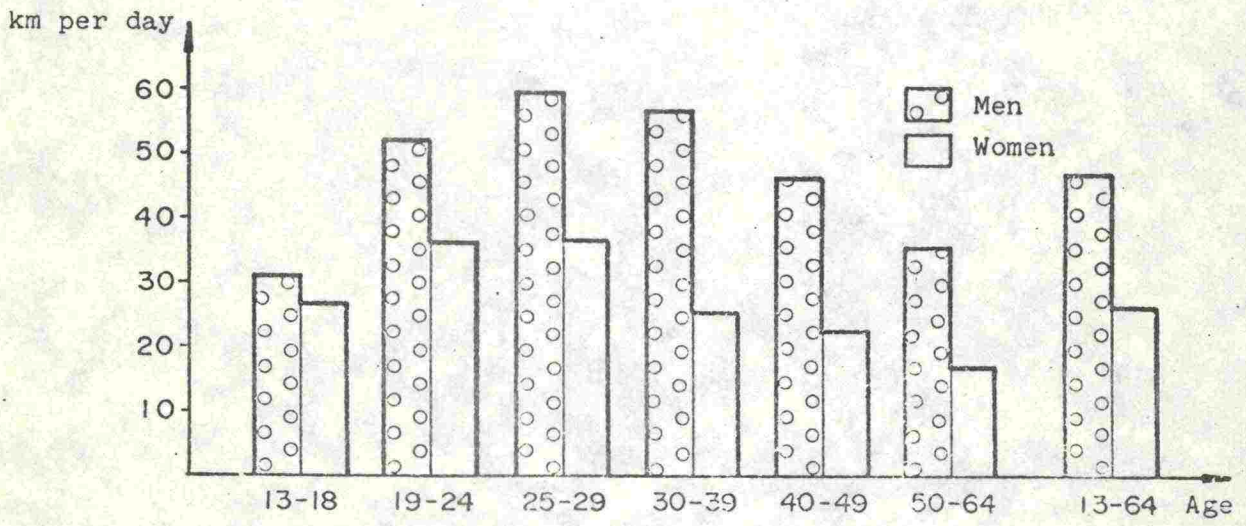


Figure: The mileage of daily trips according to age and sex

2.2 Long trips

Report: "Henkilöliikennetutkimus: Pitkät matkat 1974"
(The Person Traffic Study: Long trips in the year 1974)
TVH 712 487

SUMMARY

General

The report deals with long journeys (at least 30 km) performed by Finns of 13 to 64 years of age. The report accounts for the number of journeys, travelling performance, and time used for the journeys in general, as well as their relationship to the properties and place of dwelling of the traveller. Moreover, the modal split, purpose and length of the journeys as well as the seasonal variation in travelling have been examined.

When the results given in the report are used, it is always to be taken into account that only journeys of at least 30 kilometres of length have been included in the study. Owing to this, the results must not be generalized as concerning all travelling. The given results are rather usable when it is desirable to get a general idea of other journeys except those performed daily (journeys to the work, short shopping journeys).

Typical person performing long journeys

As typical persons performing long journeys were here considered those whose journeys constituted at least one half of the total travelling performance.

In other words, the traveller prototypes are defined so that, for example, if we pick up any long-distance train arbitrarily, at least one half of the passengers are in accordance with the train passenger prototype to be described below.

Person performing long journeys in general:

A 25 to 49 year old man who has passed the primary school or additionally a vocational school, has a driver's licence, one car is at disposal of the family, and the monthly income of the family was in 1974 more than 2,000 Fmks.

Person performing long journeys as car driver:

A 30 to 49 year old man who has passed the primary school or additionally a vocational school, has a driver's licence, one car is at disposal of the family, and the monthly income of the family was in 1974 more than 2,500 Fmks.

Person performing long journeys as car passenger:

A woman more than 30 years of age who has passed the primary school or additionally a vocational school, does not have a driver's licence, one car is at disposal of the family, and the monthly income of the family was in 1974 more than 2,000 Fmks.

Passenger of long-distance bus:

A woman less than 30 years of age who has passed the secondary school (junior high), at the maximum, does not have a driver's licence, there is no car at disposal of the family, and the monthly income of the family was in 1974 more than 1,500 Fmks.

Passenger of long-distance train:

A woman less than 30 years of age who has passed the secondary school (junior high), at the minimum, does not have a driver's licence, there is no car at disposal of the family, and the monthly income of the family was in 1974 more than 2,000 Fmks.

Aeroplane passenger:

A 30 to 49 year old man who has taken an exam at least of the college level, has a driver's licence, one car is at disposal of the family, and the monthly income of the family in 1974 was more than 4,000 Fmks., 3/4 of the aeroplane journeys were paid by others (e.g., employer) than the passenger himself.

Prototype of a home-sitter:

A 54 year old woman who has passed the primary school, is retired, does not have a driver's licence, one car is at disposal of the family, and the monthly income of the family was in 1974 less than 2,000 Fmks.

Number of journeys and travel performance

On the average, one long journey was performed in four days, and the performance was 21 kilometres per day. Travelling, however, showed very extensive variation depending on different travelling needs and possibilities.

In order to illustrate the differences that were ascertained, below the long journeys performed by <u>one hundred persons in a day</u> are examined. In respect of each property, the numbers of journeys performed by those who travelled most and those who travelled least are given (journeys/100 persons x day).

Sex

- men 32
- women 19

Education

- academic degree 36
- primary school 18

Working

- going to work outside home 31
- retired 10

Area of residence

- rural municipality 29
- city 22
- municipality of low service standard (F) 30
- municipality of high service standard (A) 18

Ownership of car

- owns a car 33
- does not own a car 13

Driver's licence

- has a driver's licence 38
- does not have a driver's licence 15

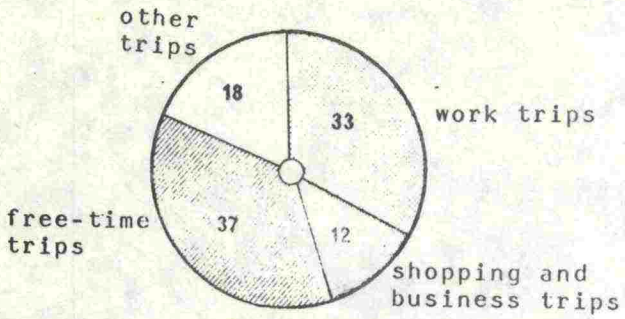
Income

- highest income class (monthly income of the family more than 4,000 Fmks) 34
- lowest income class (monthly income of the family less than 500 Fmks) 15

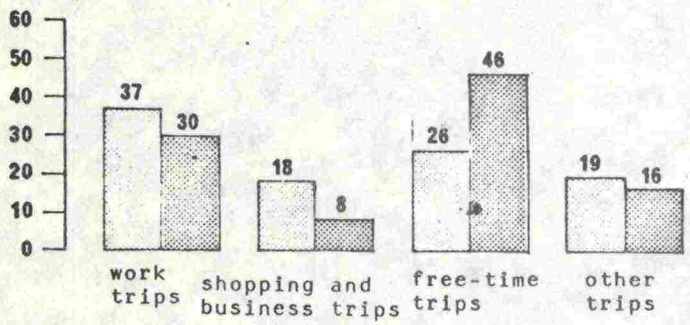
Purpose, modal split and length of journeys

By examining one hundred long journeys, in the following figures attempts have been made to establish the most important study results related to long journeys.

WHY LONG TRIPS WERE PERFORMED



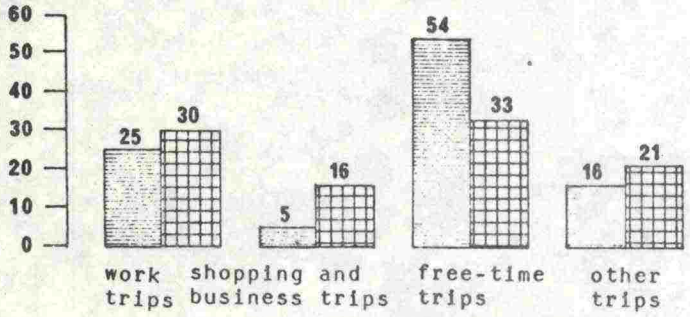
HOW THE PLACE OF DWELLING AFFECTED ON THE PURPOSE OF THE TRIP



TYPE OF COMMUNE

RURAL COMMUNES

TOWNS

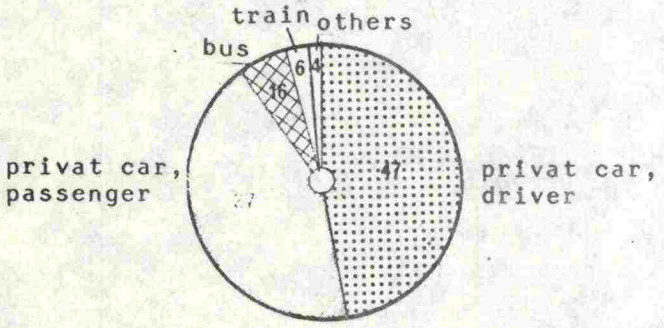


CENTER CLASSIFICATION

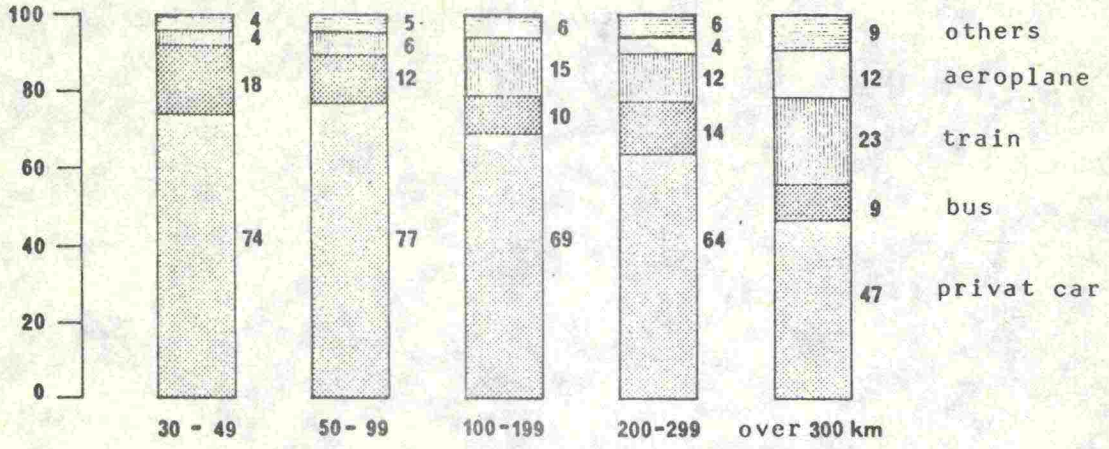
CAPITAL CENTER (A)

LOCAL CENTER (F)

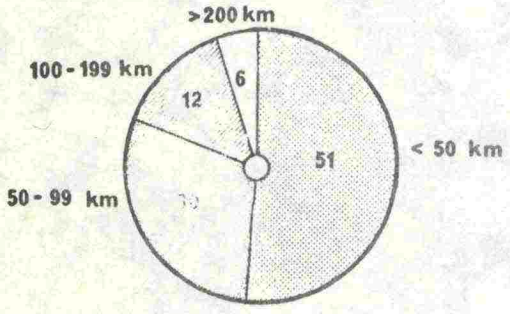
HOW THE TRIPS WERE PERFORMED



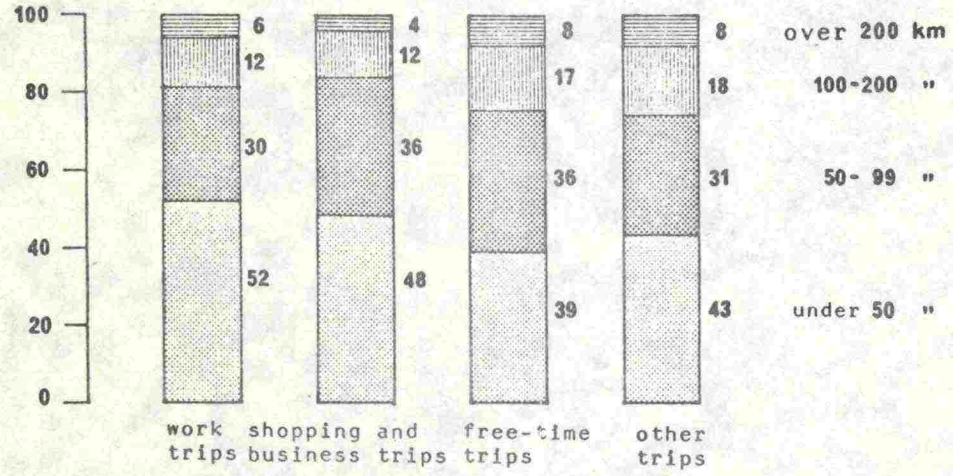
HOW THE LENGTH OF THE TRIP AFFECTED ON THE MODAL CHOICE



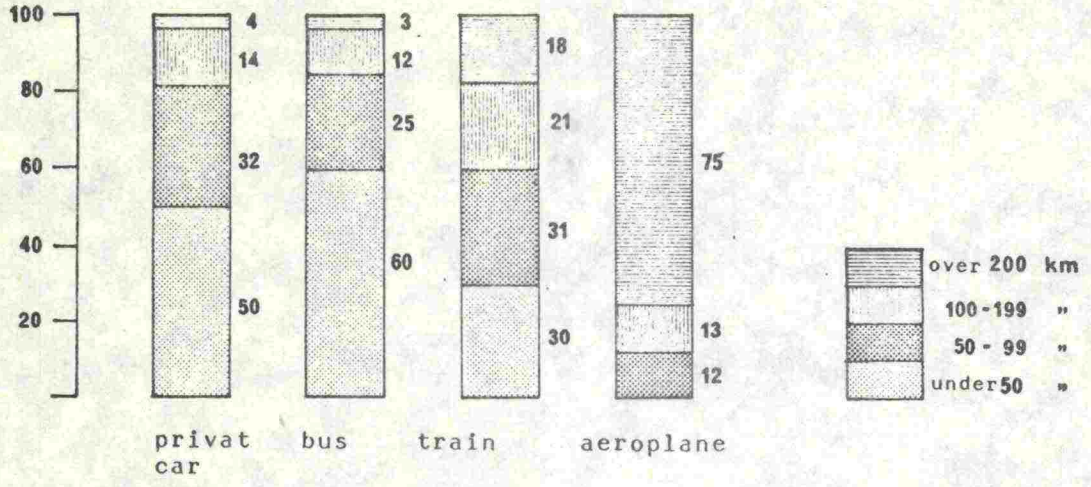
HOW LONG THE TRIPS WERE



HOW THE LENGTH OF THE TRIP VARIATED ACCORDING TO THE PURPOSE OF THE TRIP



HOW THE LENGTH OF THE TRIP VARIATED ACCORDING TO THE MODE



3. ANALYSES

3.1 Person traffic generated in different areas

Report: "Henkilöliikennetutkimus: Alueittainen generoin-tiselvitys"
(The Person Traffic Study: An areal generation analysis)
TVH 713 186

SUMMARY

The principal object of the study has been to determine trip generation models for person trips generated in centres on different levels. The second object has been to compare the differences in trip numbers between communal centres and rural areas. Some characteristics of these trips have also been ecamined.

The regional planning authorities have classified the centres into following six classes: capital centres, supraprovincial centres, provincial centres, town centres, communal centres and local centres. In this study rural areas have been examined as a separate group.

Trip generation models have been worked out from the entire material studying the different centres as a unity; in addition, each centre has been examined separately. A distinction has been made between all the trips generated in densely populated communities, outbound trips and trips within the communities, and the trips the destination of which was in another commune. Further, trip generation models have been worked out from the entire material separately for work and school trips, shopping and business trips, and leisure trips. Information concerning the population, the distribution of age and occupation groups, as well as the location of the community has been used as explaining factors for the models. As to these factors, the best results were obtained from the trip generation models for the different centres.

In local centres and centres on higher levels the average generation rate is 3 trips per person per day. In centres on lower levels the number of trips is only 1-2 trips per person per day. The number of the trips made within the centre increases as the centre grows. The greater part of the outbound trips are made into another commune. However, in rural areas the greater part of the outbound trips are made into centres on higher levels in the same commune.

As regards the characteristics of the generated trips attention has been paid to the distribution of the mode of transport and trip purpose. The different centres have been examined separately. The mode of transport naturally depends on the type of the trip as well as the quality of the traffic system. For example, there are marked differences in the modes of transport between outbound trips and trips within centres. The differences between the different centres are

also obvious. In the same way the distribution of trip purpose is dependent on the type of the centre as well as the type of the trip. Work and school trips, shopping and business trips, and leisure trips each make up about one third of all generated trips.

The last part of the study contains an example of the application of the trip generation models and an evaluation of the accuracy of the models.

In the following there are some figures illustrating the main results of the report.

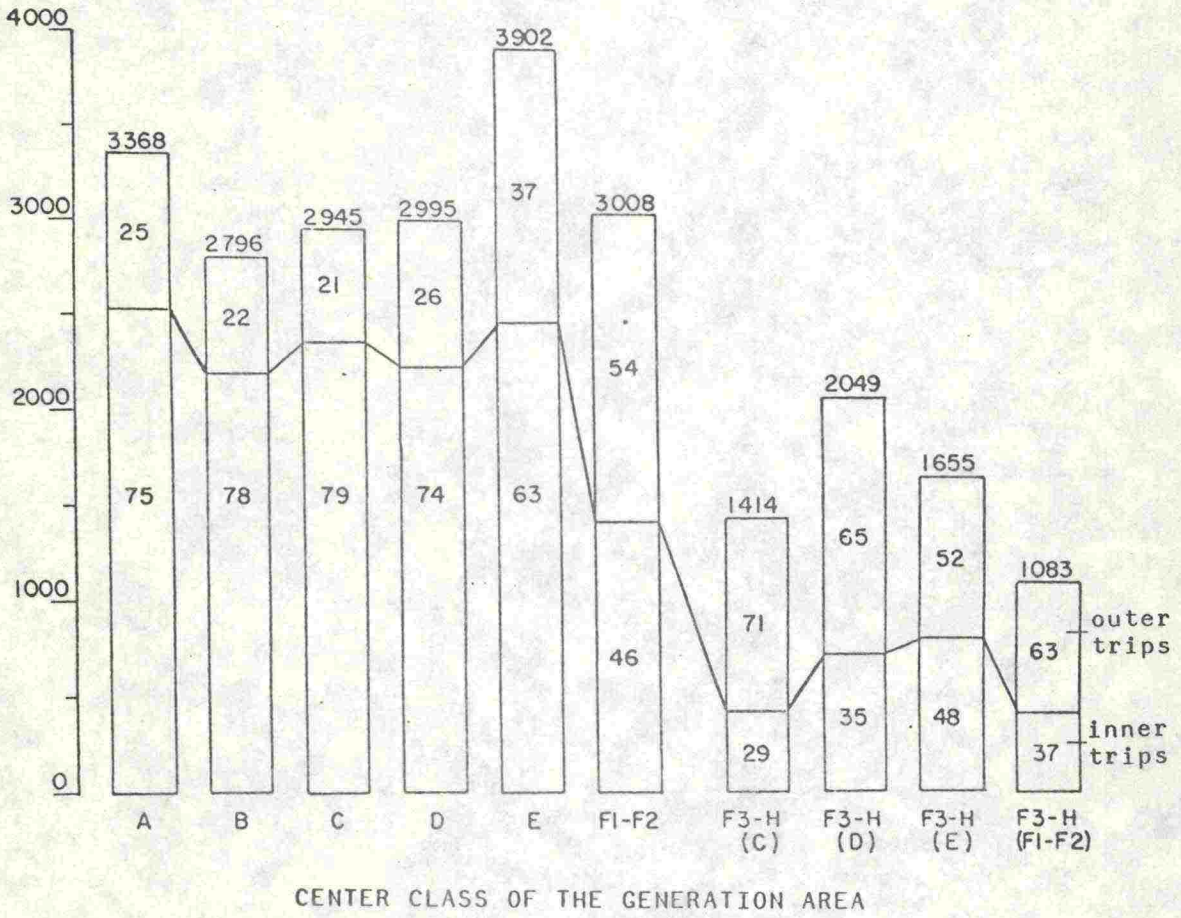


Figure: The number of all generated trips in centers on different levels and the percentage shares of inner and outer trips. The number on the column tells the number of all generated trips (trips/1000 inhabitants of the center/day).

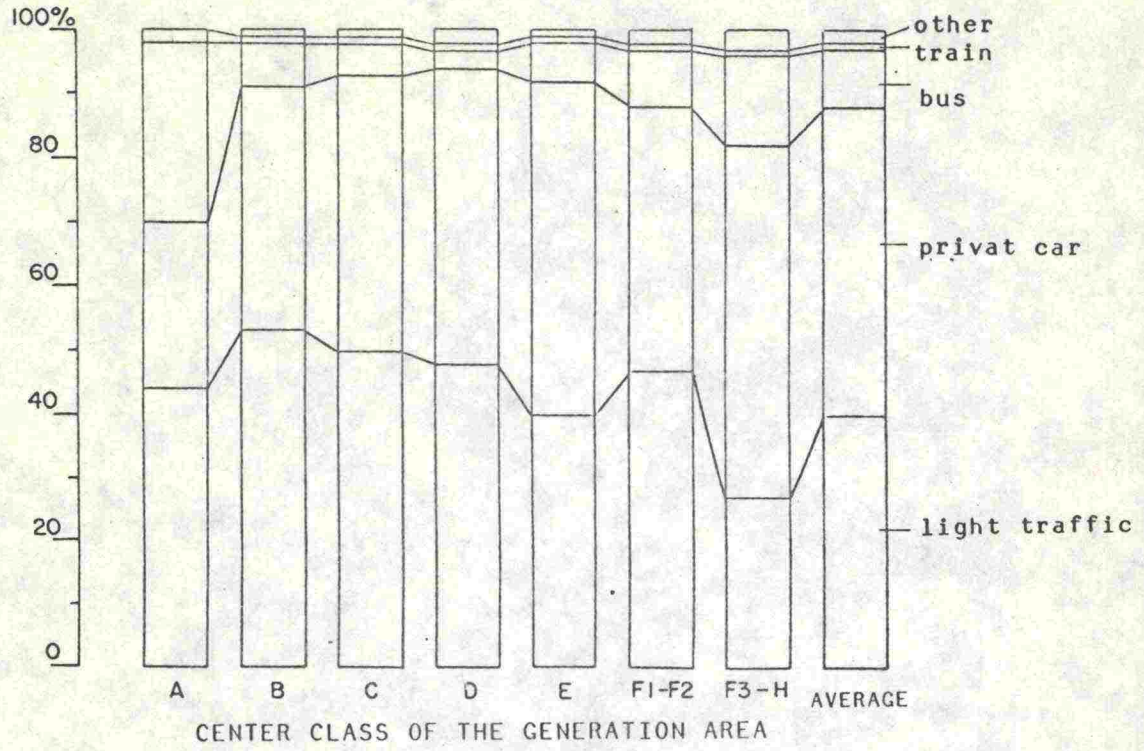


Figure: The modal split of all generated trips in centers on different levels.

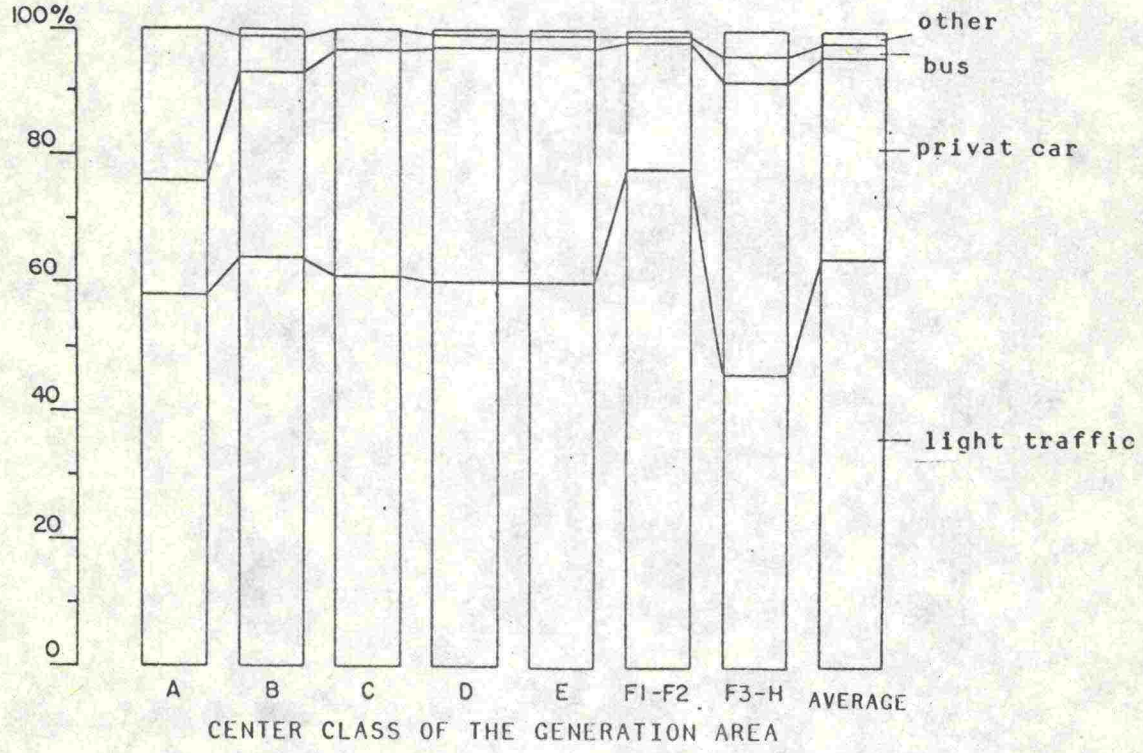


Figure: The modal split of the trips inside the centers on different levels.

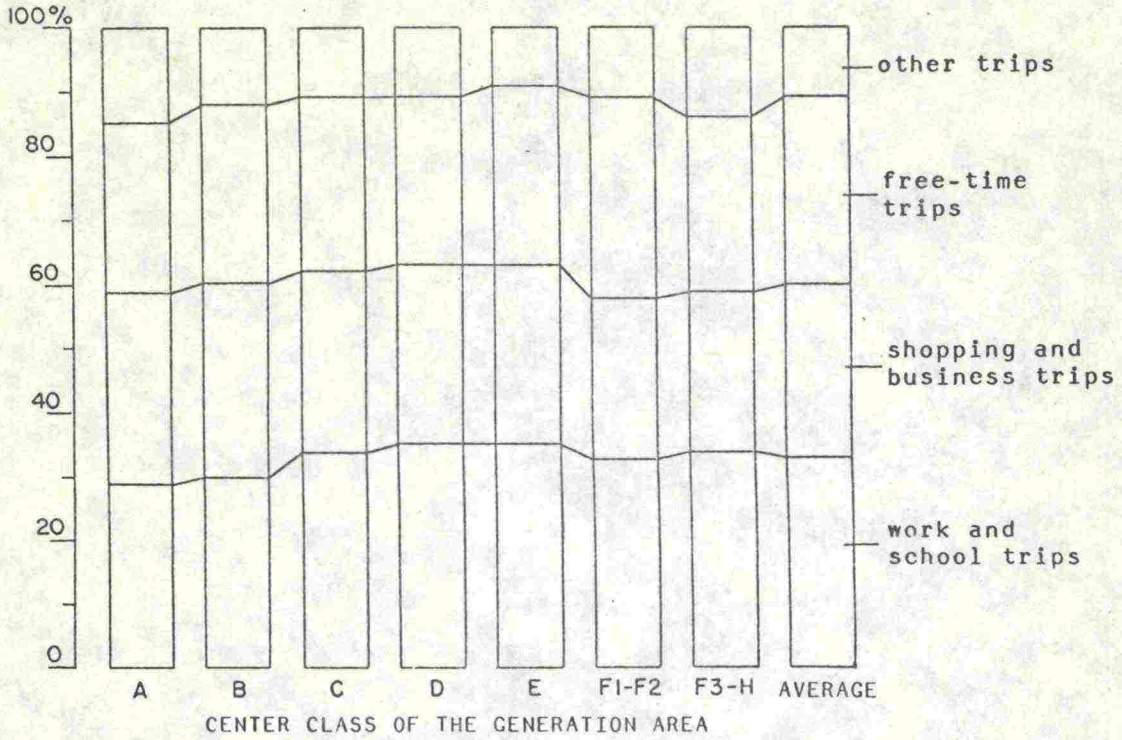


Figure: The purpose distribution of all generated trips in centers on different levels.

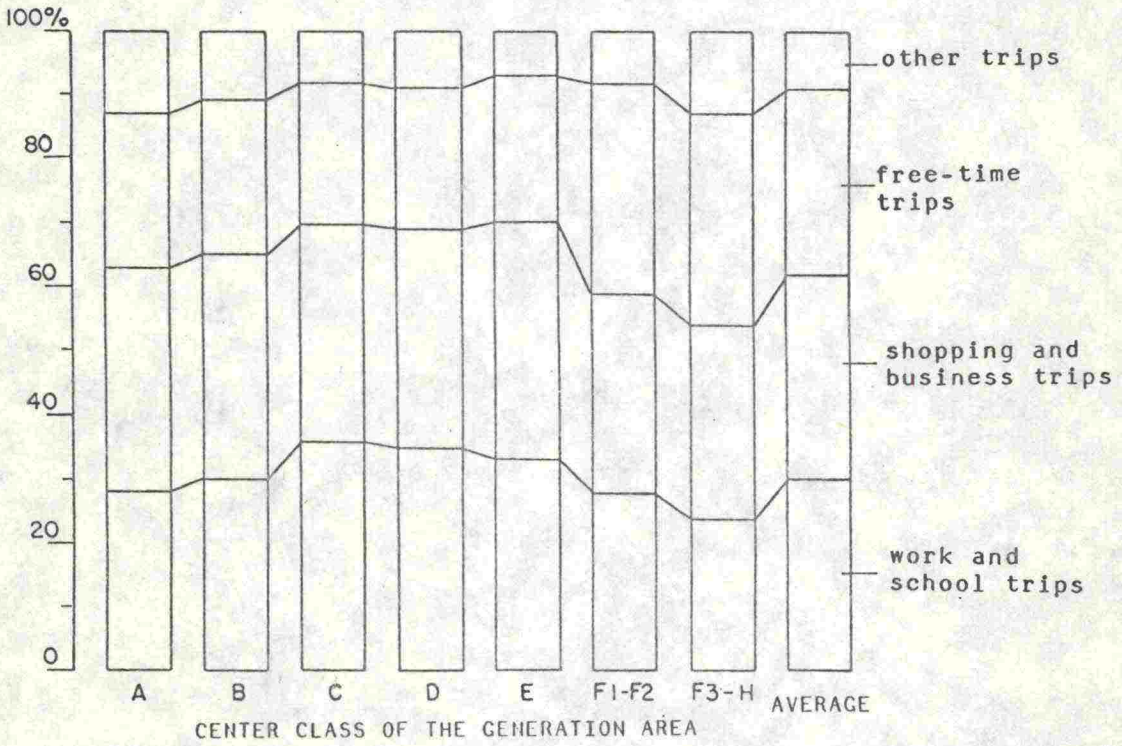


Figure: The purpose distribution of the trips inside the centers on different levels.

3.2 The person traffic between different centers

Report: "Henkilöliikennetutkimus: Eritasoisten keskusten välinen liikenne"
(The Person Traffic Study: Traffic between centers on different levels)
TVH 713 184

SUMMARY

Objectives

The main objective of the study has been to prepare models by means of which it is possible to estimate numbers of journeys of persons performed between centers on different levels. By means of the models it is possible to obtain a rough estimate of the numbers of journeys between two centers when the center classes of the centers as well as certain other properties of centers and center classes are known.

In the study, attempts have also been made to establish the total number of journeys between different centers in our country as well as the length, duration, travel speed, means of communication used, and the purpose of these journeys. The number of journeys performed by people living in sparsely populated areas to the center of their own municipality has also been examined briefly.

Delimitation of the examination

The Regional Planning Unions have, in accordance with instructions given by the Ministry of the Interior, classified the centers located within their respective areas. In these instructions, the centers are divided into six center classes, whose symbols and names are those given below:

A capital center
B supraprovincial center
C provincial center
D town center
E communal center
F local center.

In the study, journeys performed between centers belonging to these center classes are examined. In certain respects, the examinations have also been extended to cover journeys between centers and the surrounding areas with sparse population or journeys between sparsely populated areas of different municipalities alone.

Models of journey numbers

The main content of the study are the models of journey numbers prepared for the purpose of estimating the numbers of journeys between different centers. By means of these models it is possible to obtain the number of journeys (number of journeys calculated per inhabitant) from the departure center to the destination center when the following data are known:

- center class of the departure and destination centers
- distance between the centers in a beeline
- functional interdependence of the centers, i.e. whether the departure center is directed towards the destination center.

The number of journeys between the centers is obtained by multiplying the number of journeys given by the model by the number of inhabitants of the departure center. The obtained number of journeys is only a rough estimate of the order of magnitude, for in the models it has been possible to consider factors affecting the number of journeys only to a limited extent. In the report, attempts have also been made to estimate the effect of factors absent in the models on the number of journeys. The use of the models of journey numbers has been illustrated by calculating the journeys between two example centers, Mikkeli and Savonlinna.

Journeys from sparsely populated area to the center of one's own municipality

People living in sparsely populated area perform an average of 0.40 journeys per person and per day to their own

municipality's center. This figure includes both the journeys to the municipality center and the return journeys from same. Thus, people visit their own municipality center on the average every fifth day.

The distance of dwelling from the municipality center clearly affects the frequency of visiting the center. Those living at a distance of 30 to 50 kms from the municipality center come to the center half as often as those living within 3 to 6 kms from the municipality center. It was also noticed that the center class of the center of the municipality has a strong effect on the number of journeys. The lower the center class of the center of the municipality, the fewer journeys are performed to the center. For example, only the fourth of the average number of journeys are performed to a center of municipality of the level of local center.

Numbers and characteristics of journeys between centers

In the whole country, a total of 4.2 million passenger journeys are performed per day between different center classes if the sparsely populated areas as distinguished by the municipality are considered as a center class of their own. Between centers proper, which are here understood as including local centers of at least average level, 1.2 million journeys (28 %) are performed, between centers proper and sparsely populated areas 2.7 million (65 %), and between sparsely populated areas of different municipalities 300,000 journeys (7 %).

The modal split based on the number of journeys is the following:

passenger car	69 %
bus	17 %
motorcycle, moped and light traffic	8 %
train	2 %
other means of transport	4 %
	100 %

The modal split, however, shows considerable variation depending on the center class of the destination center or on the length of journey.

Besides the means of transport used, the final section of the study also examines the length, duration, travel speed, and purpose of the journeys. As far as possible, attempts have been made to perform these examinations so that the effect of the center class of the centers on the characteristic features of the journeys could be found out.

The main result of the study were the curves by means of which the number of trips between different centers can be estimated. On the next page there are some examples of these curves.

4. SPECIFIC INVESTIGATIONS

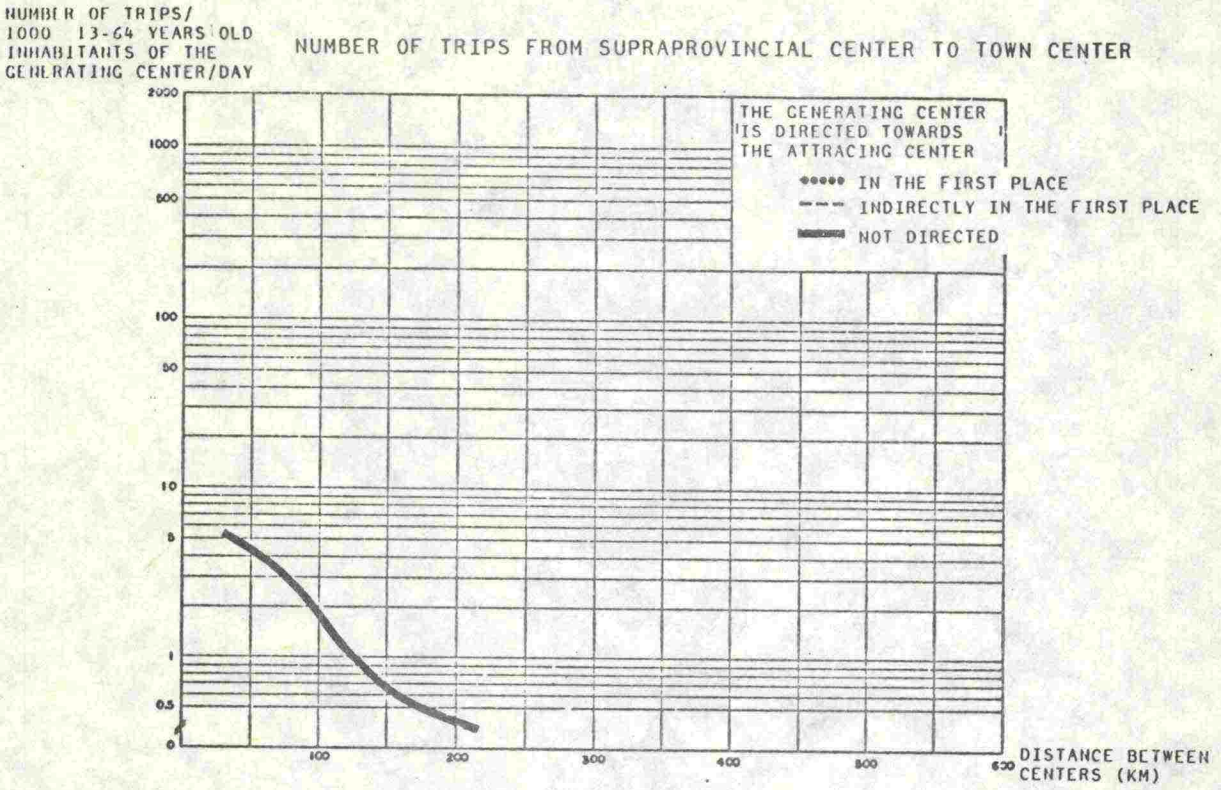
4.1 Seasonal, daily and hourly variations

Report: "Henkilöliikennetutkimus: Valtakunnallisen henkilöliikenteen vaihtelumuodot"
(The Person Traffic Study: Seasonal, daily and hourly variations of Finnish person traffic)
TVH 712484

SUMMARY

The aim of this study has been to clear up how the person traffic in the entire state varies at different points of time and to learn about the factors bringing on these variations.

In the study seasonal, daily and hourly variations in the person traffic have been looked into, both as regards the person traffic as a whole and the ways of travelling. The main emphasis has, however, been laid on the elucidation of seasonal variations.



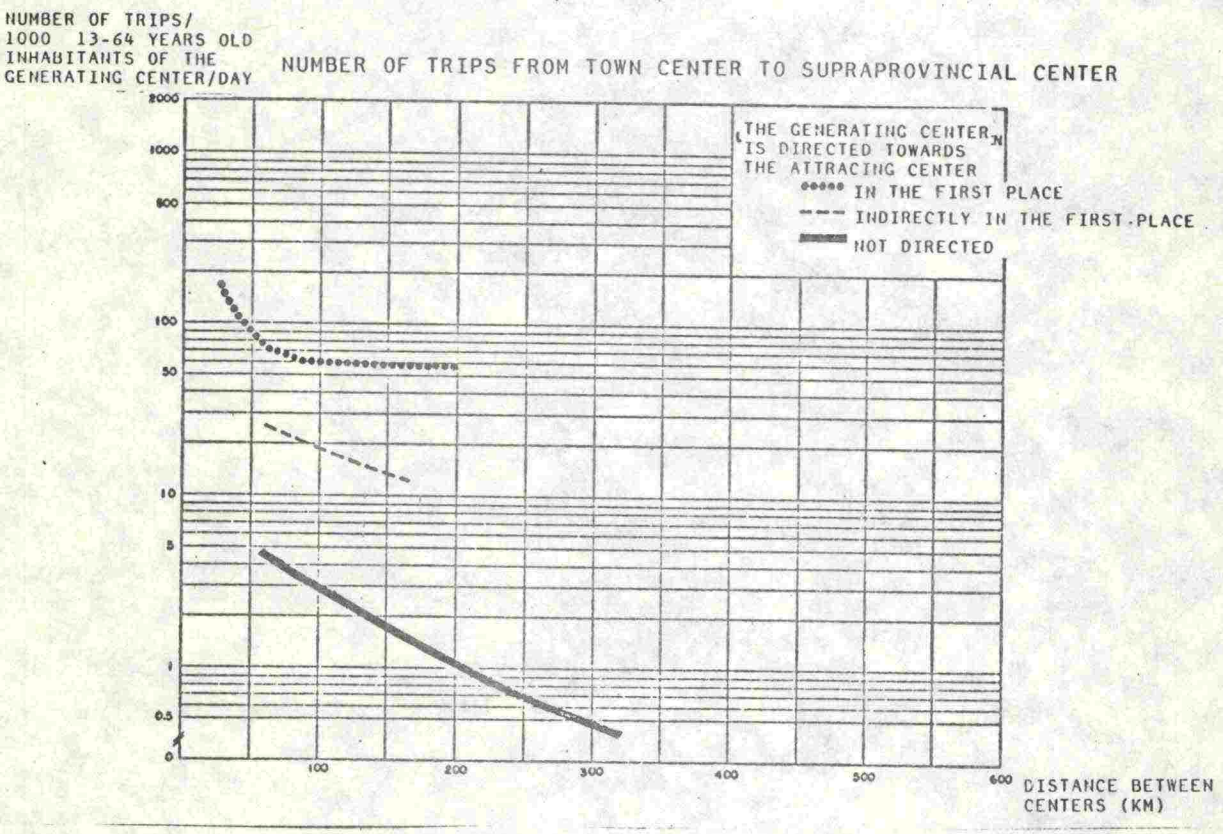


Figure: The number of trips curves between supraprovincial and town centers.

The following factors very clearly have influence upon the seasonal variations of the number of trips and the travel performance of a single person:

- main mode,
- purpose of trip,
- length of trip and
- load of passenger car.

The effect of the two first explanatory factors upon a person's travelling behaviour has also been studied as regards the day of the week and the hour of the day.

The effects of the universal energy crisis prevailing during the first part of the year of study have been reflected upon the results of this report. Especially the seasonal fluctuations in passenger car traffic have deviated from the normal because of the crisis, which naturally also reduces the application value of the results.

Below some of the most interesting results concerning person traffic and its forms of fluctuation:

- The daily number of trips (all ways of travelling) is 2.96. No seasonal variations occur.
- Long trips in summertime bring about a performance top in June. The average length of trip is then 15.3 km. Trips are shortest in April the average length being only 10.3 km.
- The shares of different ways of travelling in all of the country's person trips and the total performance are as follows:

main mode	share in %	
	trips	performance
walking	24.5	2.4
bicycle, motorcycle, moped	13.8	4.0
passenger car	43.7	63.9
public transport	15.2	23.6
unknown	2.8	6.1
a total of	100.0	100.0

- **Walking and public transport trips are clearly less** frequent in summertime than during other seasons: as to the passenger car, bicycle, moped and motorcycle traffic the situation is the opposite.

- As the load of passenger car increases, the average length of the passenger car trip as a rule also increases. This trend is the same during all seasons.

- Typical for daily fluctuations in the person traffic as a whole is the lessening of the number of trips during weekends and the large increase in the length of trips, specially noticeable on Sundays. The performance, too, reaches its peak at that time.

- Passenger car trips divide quite evenly upon all days of the week, whereas the fluctuation in the number of trips taken during weekdays or the weekend is very evident as regards other ways of travelling.

- Passenger car traffic deviates from other ways of travelling also as regards the performance: long trips evoke a strong growth of the daily performance during the weekend days.

- The hourly fluctuation of the entire person traffic shows three typical clear peaks: morning peak at 7-8 am., midday peak at 11-12 am. and afternoon peak at 4-5 pm. The share of this last mentioned hour in all daily trips is 11.3 % and in the daily performance 10.0 %.

- Public transit differs essentially from other ways of travelling both as regards the number of trips and the performance, due to its sharp peak in the morning between 7 and 8 o'clock.

In the following there are some figures about the results of the study.

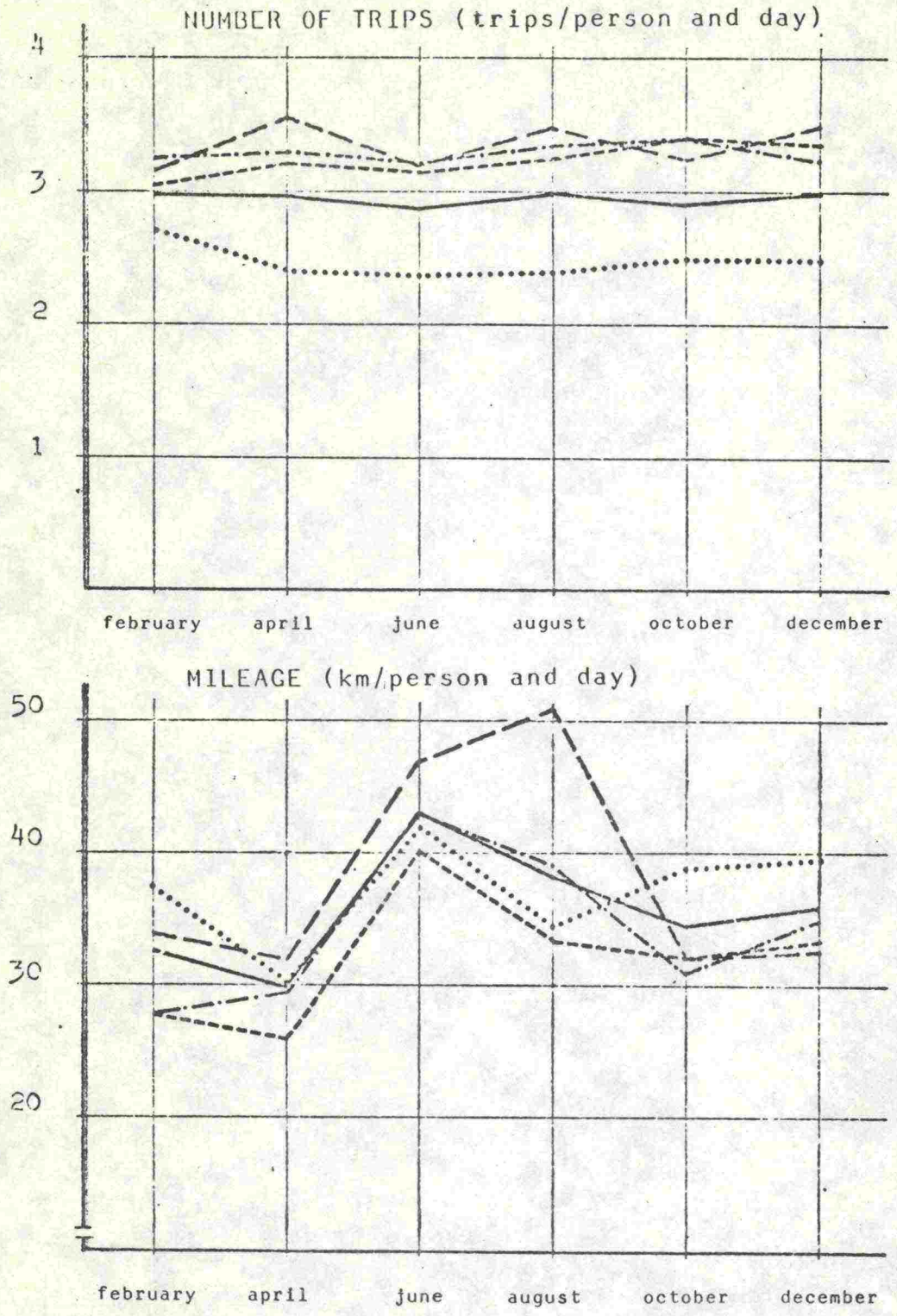


Figure: The seasonal variation of the number of trips and the mileage in different areas and in the whole country --- all modes.

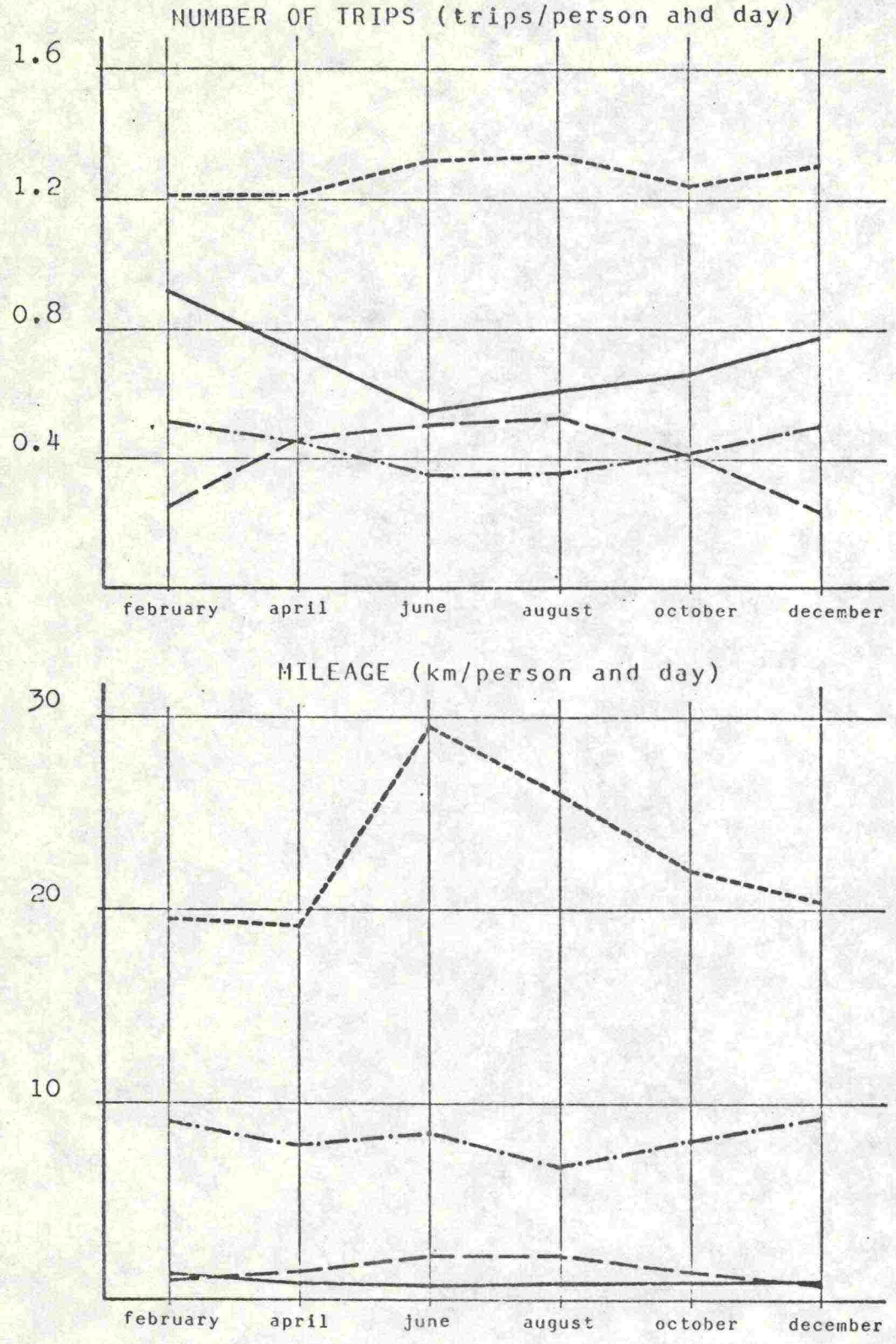


Figure: The seasonal variation of the number of trips and the mileage in different modes.

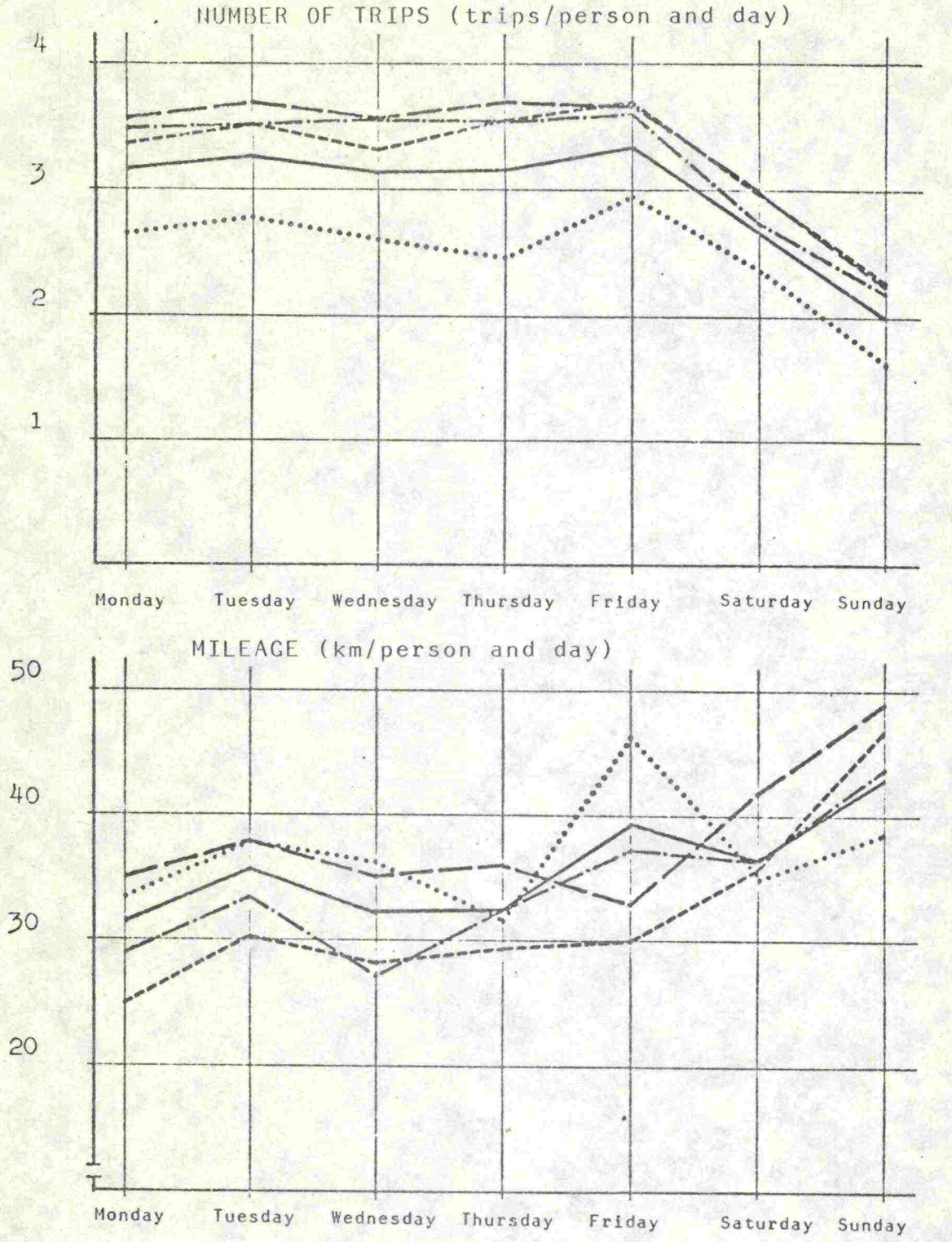


Figure: The day-to-day variation of the number of trips and the mileage in different areas and in the whole country --- all modes.

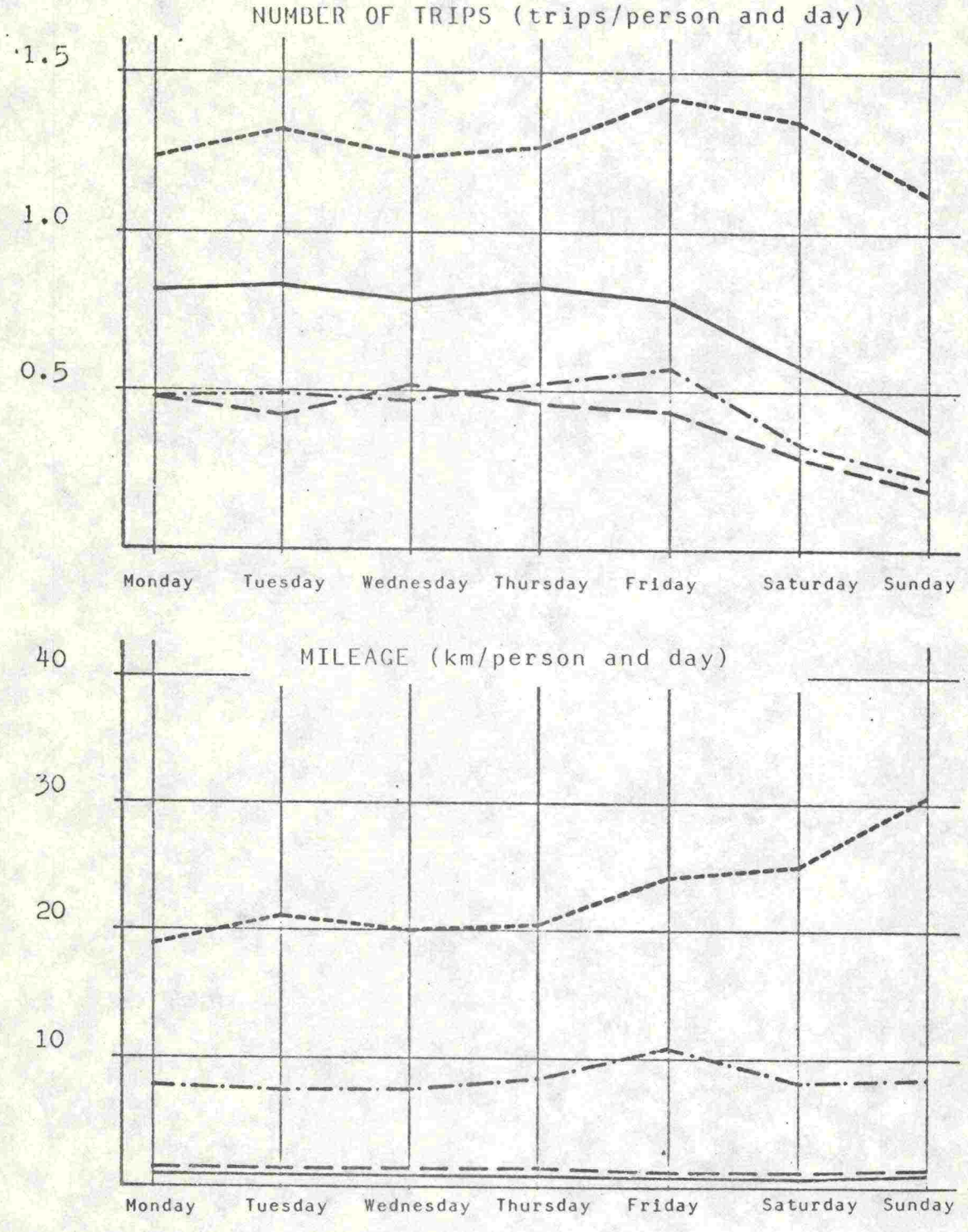


Figure: The day-to-day variation of the number of trips and the mileage in different modes.

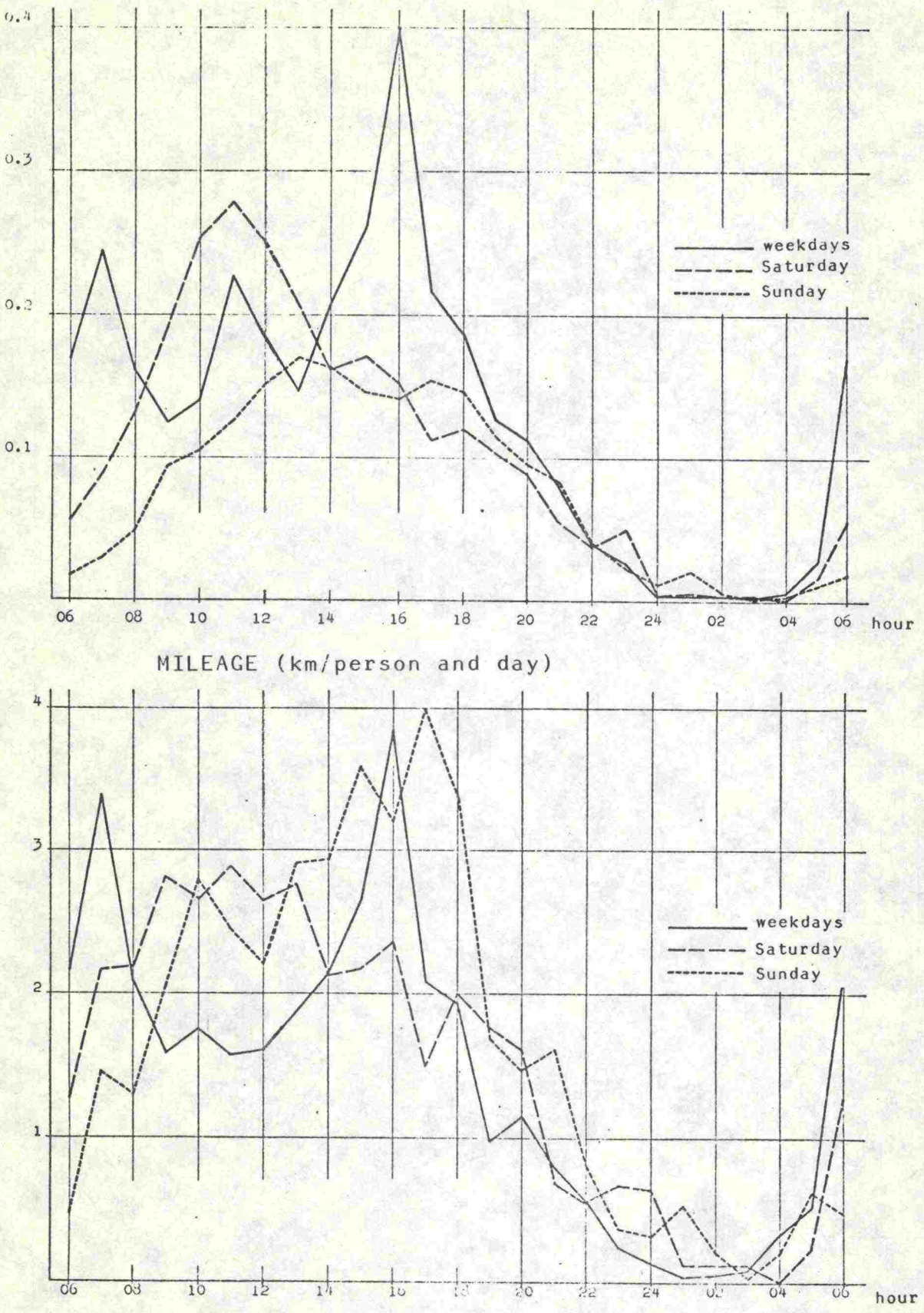


Figure: The hourly variation of the number of trips and the mileage in weekdays, Saturday and Sunday --- all modes.

4.2 Availability of traffic services

Report: "Liikennepalvelujen saatavuus TVH:n henkilöliikennetutkimuksen mukaan"
(Availability of traffic services according to the Person Traffic Study)

SUMMARY

The aim of this study has been to explain the accessibility and level of service of different travel communication services, and their differences in various areas and according to population groups. Accessibility in this study means the availability of a travel communication service from the viewpoint of an individual. The services studied have been road, rail and air transportation, and telecommunications.

The most important task of the Person Traffic Survey has been to study how the individual travels. The information illustrating the accessibility and level of service of the travel communication services was collected as background information concerning traffic behaviour. Because of this, the angle of approach to accessibility and level of service is rather restricted. The deficiencies in the data have also affected the quantity and character of the indicators used. The study does not seek to take a stand on the quality of accessibility and level of service. However, it is hoped that the results obtained give a picture of the conditions prevailing in various parts of Finland.

Accessibility has been mainly characterized by the distance of the travel communication service point from the user. The results have been expressed in the form of distributions and mean distances. As regards public transport, the level of service has been mainly described in terms of frequency of the means of transport. Otherwise, quantitative information concerning some of the most essential components of the level of service has been given.

Regional distribution has been based on the following divisions: administrative districts, regional development zones, and various kinds of population centres (according to the classification of the Ministry of Interior). Distribution according to population has been mainly based on family income.

In the whole Finland, 59 % of households had in 1974 atleast one car in their disposal (owned or otherwise) and 5 % had two or more cars. In the north of Finland the proportion of car-owning households is larger than in the south, but the density of cars (cars/1000 inhabitants) is larger in the south. This results from the smaller average size of households in the south of Finland. 68 % of households had a telephone at home (owned or rented). The proportion of households with telephones is greatest in the admistrative district of Uusimaa, and smallest in that of Oulu.

In the whole country, the average distance from the nearest bus stop is 0.61 km, from the nearest railway station 13 km, from the nearest airport (including airfields used by general aviation or only by military aviation) 40 km, and from the nearest post office 2.2 km. The longest average distance from the nearest bus stop is, unexpectedly, not in the north but in the administrative district of Vaasa; the next is in that of Lapland, and the shortest in that of Kymi. The average distance from the nearest post office is longest in the administrative district of Oulu. The average distances the other travel communication services mentioned above are longest in Lapland. With the exception of the average distance from the nearest bus stop, the average distances of the travel communication services are shortest in the administrative district of Uusimaa.

Accessibility and level of service are best in the south of Finland. In central Finland accessibility and level of service are relatively evenly poor. But in the north of Finland there are greater variations between different areas.

Those persons in Finland who are worst served by travel communication services are to be found almost without exception in the administrative districts of Oulu and Lapland.

In the following there are some figures about the results of the study.

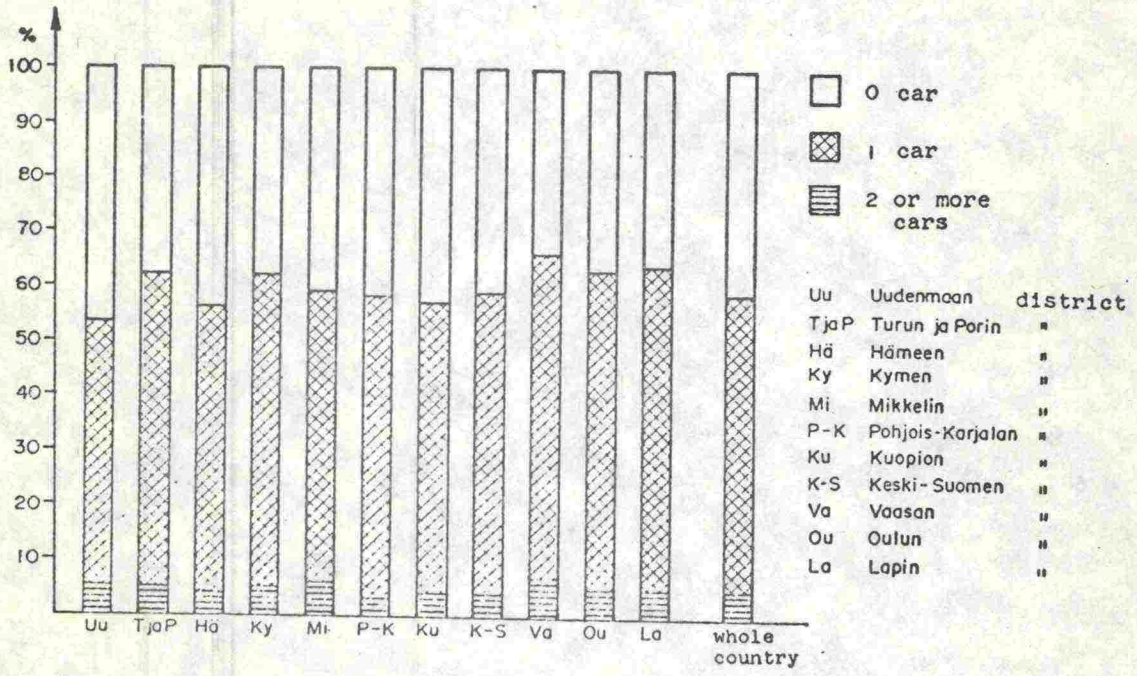


Figure: The shares of the car owning families in different districts.

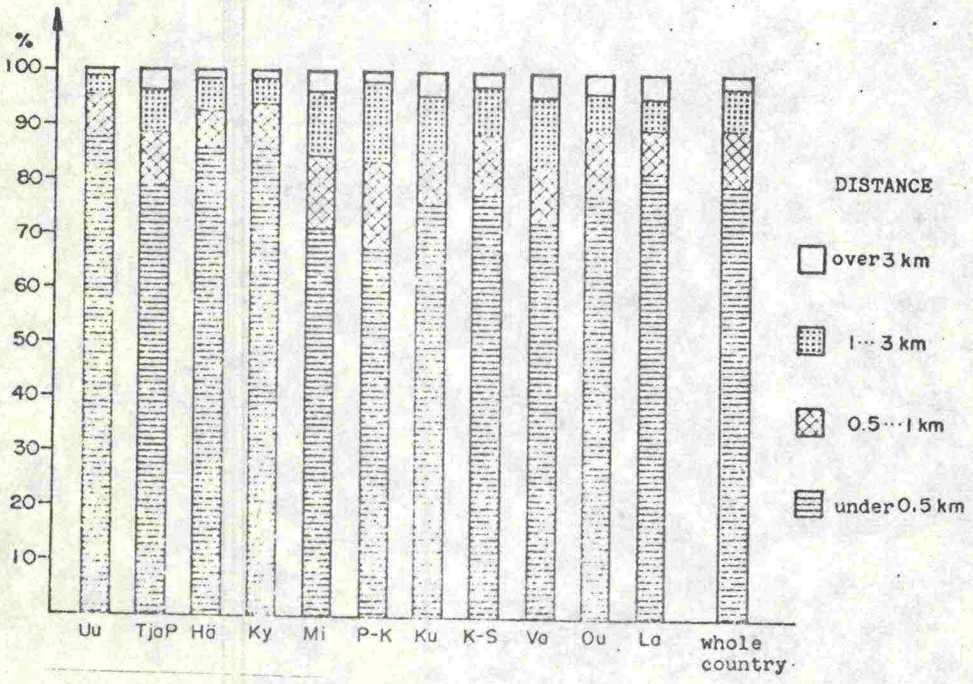


Figure: The distance of the nearest bus stop in different districts.

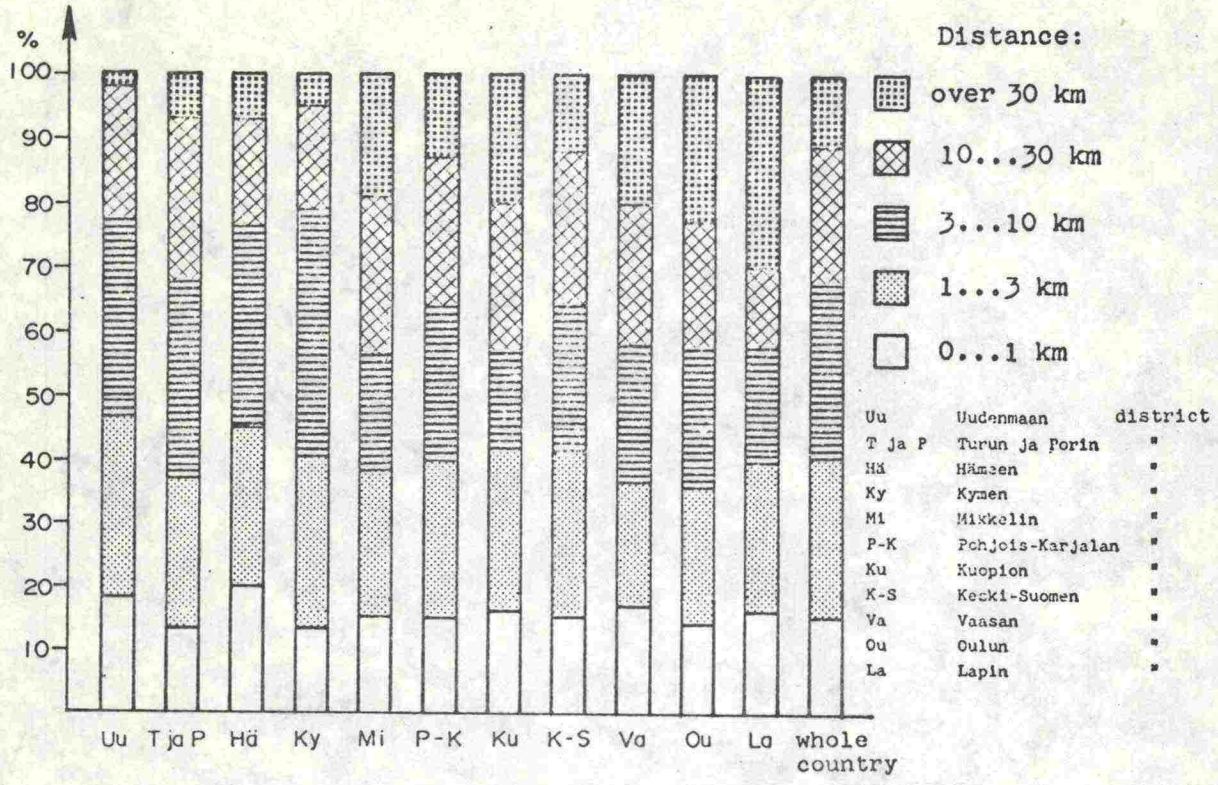


Figure: The distance of the nearest railroad station in different districts.

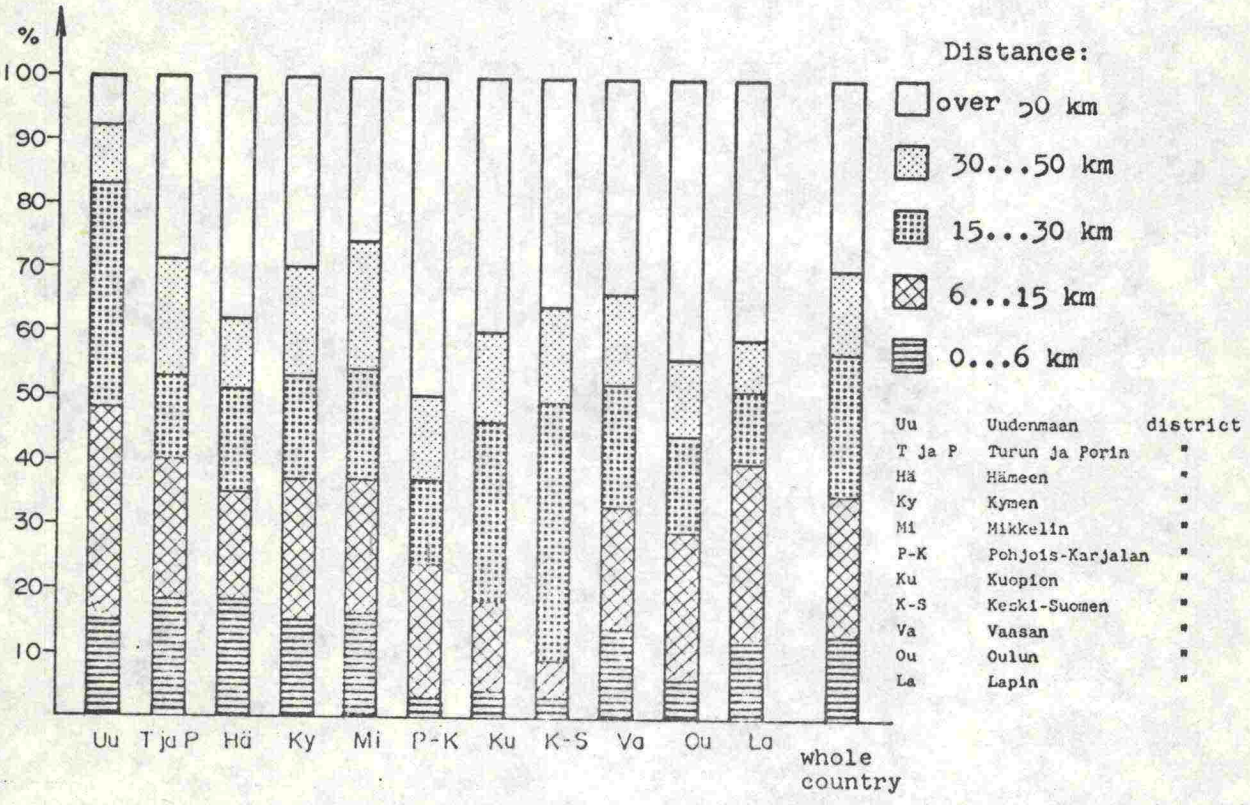


Figure: The distance of the nearest airport in different districts.

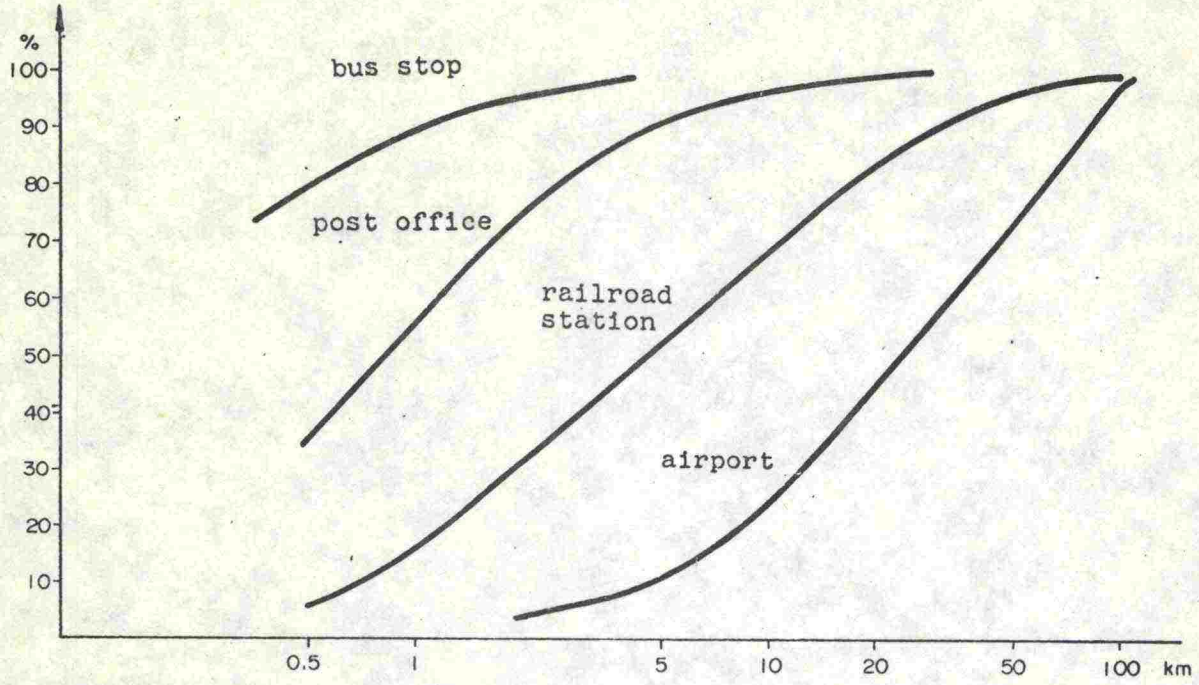


Figure: The distance between people and different traffic services.

4.3 Accessibility of other services

Report: "Palvelujen tavoitettavuus Suomessa"
(Accessibility of services in Finland)

SUMMARY

In the present examination the accessibility of services is being studied: How far are the services from the replying persons, what sorts of differences are there in the accessibility of different services, as well as regional differences in the accessibility of services.

Services to be dealt with were grocery store, primary school (lower level of comprehensive school), bank, library, pharmacy, post office, mobile store, railway station, and airport.

Moreover, the distance from the center of one's own municipality of city and, regarding those living in the countryside, the distance from the nearest city were examined. Out of the material of the Person Traffic Study, the cumulative percentages of replying people who have access to the services were calculated as per distance class.

The accessibility of services was first examined as per county, in the entire country, and then one service at a time in the different counties. In this way the differences in accessibility between services were found out, which were great, and the differences in a certain service between counties, which were relatively little.

Differences in distances of services were examined, and it was noticed that the differences were greatest in the counties of northern, central, and eastern Finland and became smaller towards the counties of western and southern Finland. No regularity could be noticed in the differences in distances of services between different levels of accessibility.

The counties were compared with the average accessibility in the entire country. Poorly accessible were the counties in northern, central and eastern Finland. The counties in western Finland were of average accessibility, and the counties in southern Finland were well accessible (figure on the next page).

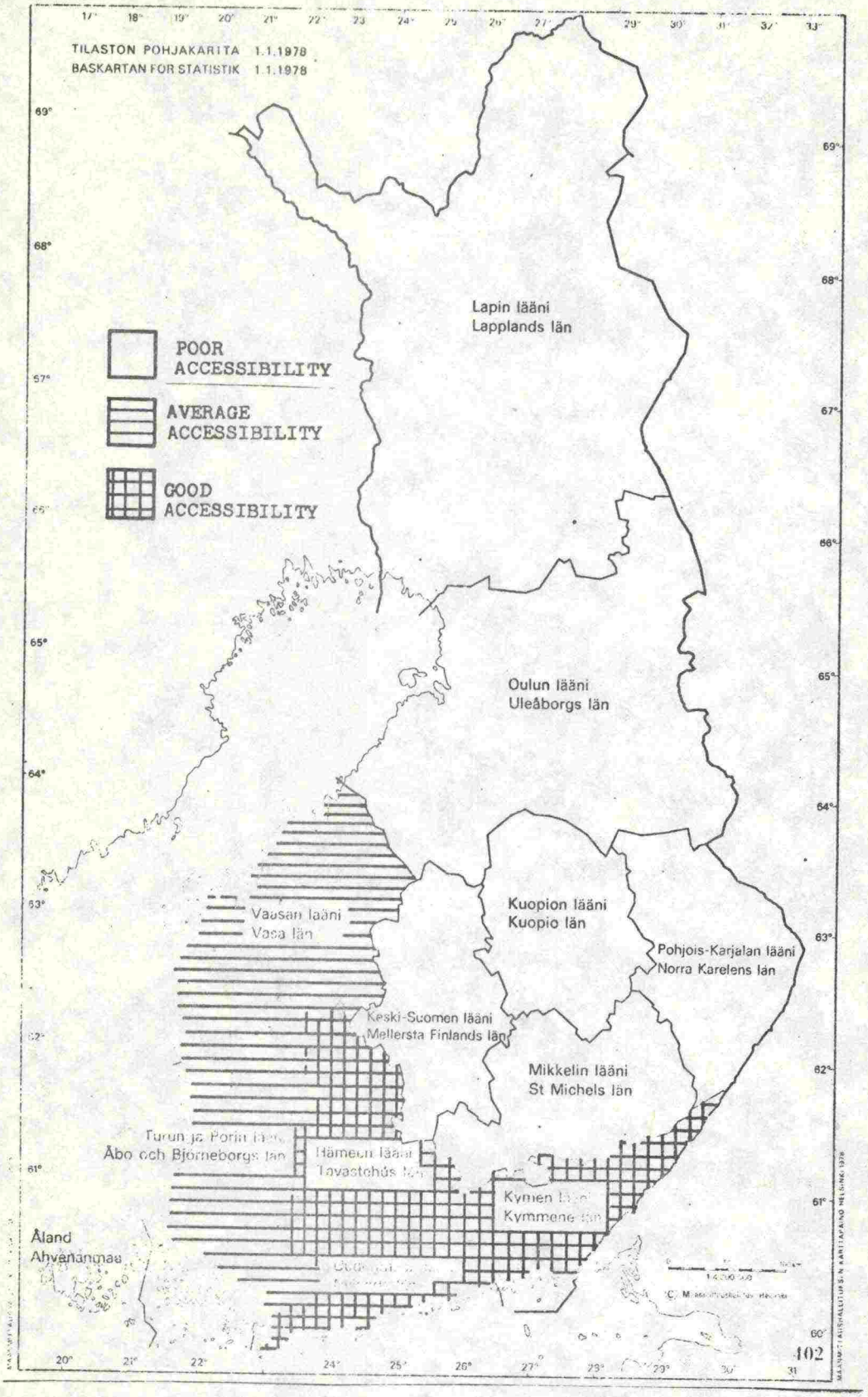


Figure: Accessibility of services in different parts of Finland.

APPENDIX

THE ORGANIZATION OF THE PERSON TRAFFIC STUDY

The Research Office of the Economic Division of the National Board of Public Roads and Waterways (prior to the organizational reform 1.10.1975, the Network Office of the Road Planning Division) has been in charge of planning and carrying out the study.

Leaders:

Maire Kaartama, M.Sc. (Eng.)
Mikko Jokinen, M.Sc. (Eng.)

Secretary:

Reijo Syrjäsalo, M.Sc. (Eng.)	(- 15.2.1975)
Olli Mäkelä, M.Sc. (Eng.)	(1.4.1975 -)

Supervisory working group:

Chairman	Jussi Sauna-aho, M.Sc. (Eng.)	Ministry of Transport
	Arto Salmela, M.Sc. (Eng.)	Ministry of the Interior (- 1974)
	Seppo Hirvonen, M.Sc. (Eng.)	Ministry of the Interior (1974 -)
	Pentti Bergius, M.Sc. (Eng.)	Parliamentary Transport Committee (- 1975)
	Ritva Temonen, researcher	Board of Administration of the Finnish State Railways
	Toivo Kankaala, M.Sc. (Eng.)	Union of the Finnish Regional Planning Associations
	Margit Sahavirta, Chief Actuary	Central Statistical Office of Finland
	Ilkka Pätäri, M.Sc. (Eng.)	National Board of Public Roads and Waterways
	Erkki Leiviskä, M.Sc. (Eng.)	(- 1976) - " -
	Jorma Kosunen, M.Sc. (Eng.)	(1976 -) - " -
	Maire Kaartama, M.Sc. (Eng.)	- " -
	Mikko Jokinen, M.Sc. (Eng.)	- " -
Secretary	Reijo Syrjäsalo, M.Sc. (Eng.)	(- 1975) - " -
"	Olli Mäkelä, M.Sc. (Eng.)	(1975 -) - " -

Besides the actual members of the research group, the following people and enterprises have participated in the study at various stages:

Data collection and processing

- planning of sample and precision of results
  Oy Menetelmäpalvelu/Kimmo Linnilä, B.Pol.Sc.
- planning of questionnaires
  Viatek Oy/Marja Granlund, B.Pol.Sc.
- control interviews
  Suomen Gallup Oy/Leila Lotti
- data processing
  Viatek Oy/Jussi Jalanka, M.Sc. (Eng.)

Reporting

- study of daily trips
  Planning Consultants Oy ERG Ltd./Kari Karessuo, M.Sc. (Eng.)
- study of longer trips
  Planconsult/Matti Vauhkonen, engineer
  Raimo Kauhanen, M.Sc. (Eng.)
- investigation of variations in travelling according to time
  Technical University of Helsinki, laboratory of traffic and transportation engineering/
  Seppo Sarjamo, M.Sc. (Eng.)
  (thesis for engineering degree prepared under supervision of Prof. Sulevi Lyly)
- investigation of trip generation
  Technical University of Tampere, Department of Civil Engineering/
  Jukka Valorinta, M.Sc. (Eng.)
  (thesis for engineering degree prepared under supervision of Prof. Olli-Pekka Hartikainen)
- study of the availibility of transport services
  Technical University of Helsinki, laboratory of traffic and transportation engineering/
  Anne Leppänen, M.Sc. (Eng.)
  (thesis for engineering degree prepared under supervision of Prof. Sulevi Lyly)

- study of the accessibility of services
  University of Helsinki, Department of Geography/
  Marja Pulkkinen, B.A. (pro gradu paper prepared under
  supervision of Prof. Kalevi Rikkinen)

15842—76